TECHNOLOGY

Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

OBER 25, 1943
UME 32, No. 22

IAL PUBLICATION
of the
ROCEEDINGS
CAN ASSOCIATION
XTILE CHEMISTS
D COLORISTS

AMERICAN DYESTUFF REPORTER

PUBLIC LIBRARY
DETROIT

Meaning—*Fastness*...

The title *Solophenyl* is not a name assigned to a group of dyestuffs just for the appeal that name might have.

Solophenyl is a mark of distinction accorded a series of Direct (substantive) dyestuffs possessed of the highest rated fastness to light of all Direct colors.

While the range of Geigy *Solophenyl* colors is ever increasing, it is still a very limited and definitely a restricted series, so that you can firmly establish in your mind the fact that "only the fastest to light Direct colors are privileged to bear the name *Solophenyl*".

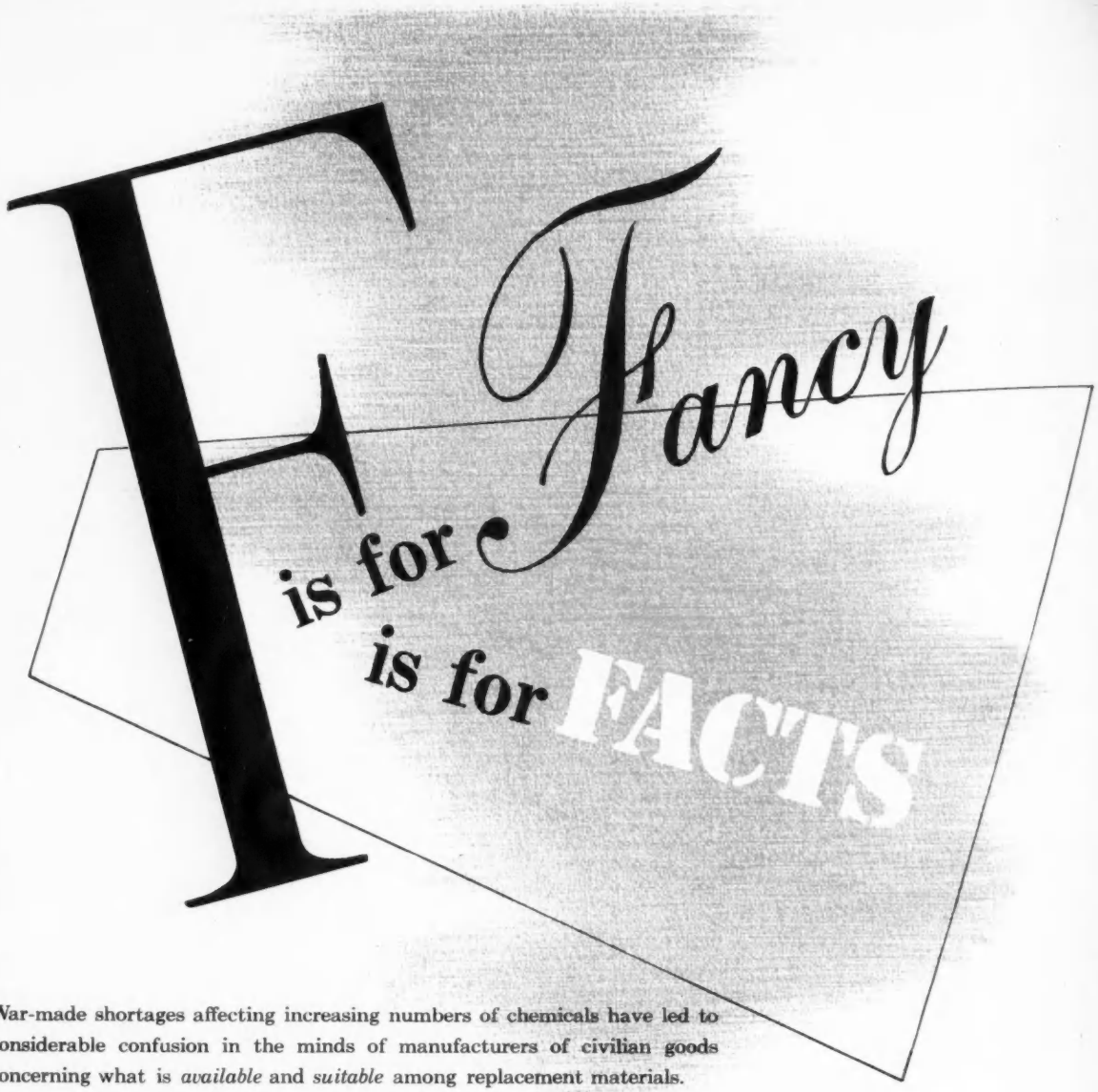
GEIGY COMPANY INC.

89-91 BARCLAY STREET — NEW YORK—NEW YORK

Boston · Providence
Philadelphia · Charlotte
Toronto · Cincinnati
Portland, Ore.

Geigy
Dyestuff Makers Since 1859

In Great Britain
The Geigy Colour Co., Ltd.
National Buildings
Parsonage, Manchester



War-made shortages affecting increasing numbers of chemicals have led to considerable confusion in the minds of manufacturers of civilian goods concerning what is *available* and *suitable* among replacement materials.

Here at Cyanamid we have considered it a vital part of our wartime services to provide complete and accurate information concerning the properties and uses of non-critical materials.

Some of these materials are new . . . others are well-known staples for which timely research has found new uses. These may not only meet your immediate needs but provide far-reaching advantages for postwar product development as well. In any event, Cyanamid research chemists will be glad to help you solve your materials problem. Write to Cyanamid for details.

AMERICAN CYANAMID
& CHEMICAL CORPORATION
(A Unit of American Cyanamid Company)
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

MANUFACTURERS OF
SULPHONATED OILS • PENETRANTS • FINISHES • SOFTENERS
SIZING COMPOUNDS • DECERESOL* WETTING AGENTS
AND OTHER SPECIALTIES FOR THE TEXTILE INDUSTRY
*Reg. U. S. Pat. Off.

American Dyestuff Reporter, Vol. 32, No. 22, October 25, 1943. Published every other Monday. Copyright, 1943, by Howes Publishing Co., 440 4th Ave., New York, 16, N. Y. Domestic subscription, $5.00; Canadian, $6.00; Foreign, $6.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.

Winning THE PEACE!

The words "Winning the Peace" are of deep import to all forward-looking executives; for, in terms of production and marketing activities, the Post-War era will become another war—a peaceful war.

The textile strategy of this new war will be mapped out in chemical laboratories and around directors' tables . . . its casualties will be those who planned too late.

To dyers, bleachers and executives who realize the vital importance of efficient production and strategically sound marketing methods in this coming era of unparalleled competition, we offer our research and laboratory facilities as well as helpful suggestions. In the interest of the progress of this great textile industry, your inquiry is invited.

DYESTUFFS • CHEMICALS • INTERMEDIATES

CIBA COMPANY INC.

Greenwich & Morton Sts. NEW YORK

BOSTON · CHICAGO · MONTREAL · CHARLOTTE
PROVIDENCE · SAN FRANCISCO · PHILADELPHIA

VAT DYES OF THE DOW CHEMICAL COMPANY

We're better equipped to serve you now.....

Latest Testing Equipment Installed in New Home of FEN.

The new home of Fen is equipped to give you increased, more modern, and better service than ever before. The additional plant space will be used to step up production of chemicals for use on military fabrics.

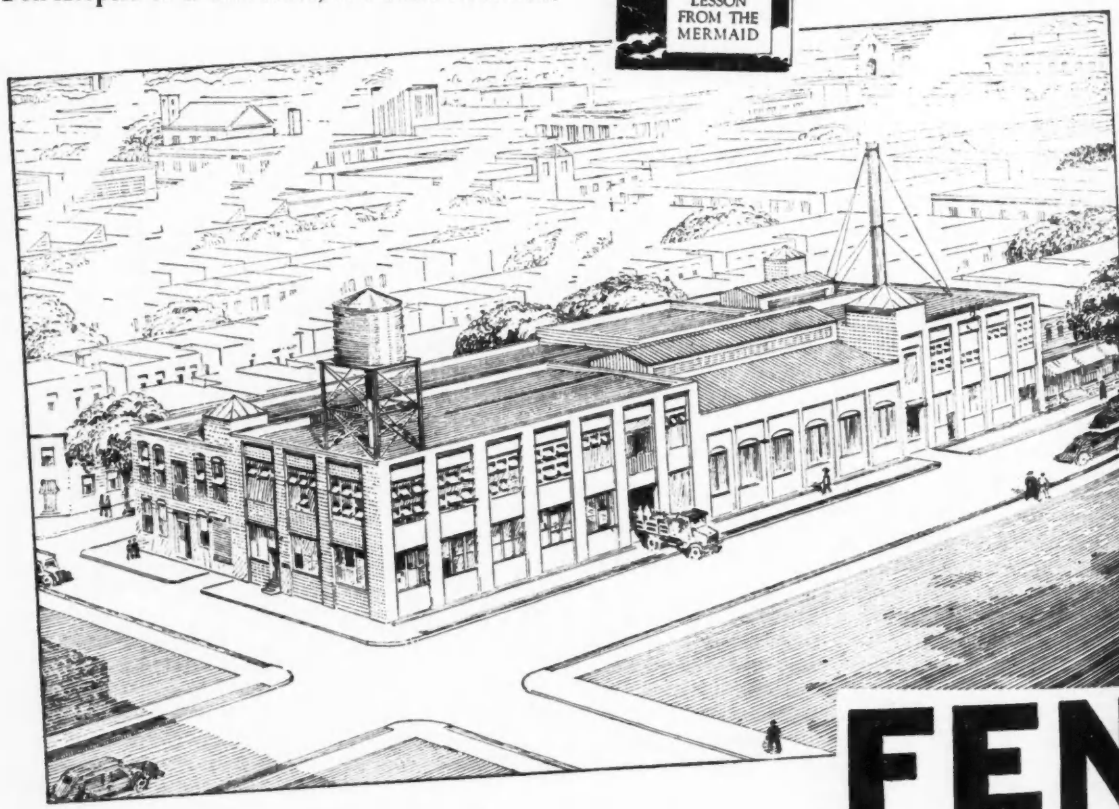
Fen is available in three ways—Fen Water Repellent, Fen Anti-Mildew, and Fen-Aseptic, a combination of both.

When uniforms and equipment require protection against mildew as well as wet weather, Fen-Aseptic is the ideal finish.

Fen-Aseptic is a non-toxic, one bath treatment that assures safety for both fabric and user. Cuts cost of labor and chemicals. Easily applied on quetsch, padder, jig, beck, starch mangle or continuous process machine, followed by drying at an elevated temperature.

Fen for war orders comes first. But our increased production facilities have made it possible for us to meet some of your requirements on civilian goods. Let us serve you now.

For fabrics that require water repellency alone, we recommend Fen Water Repellent. Write for "Take a Lesson from the Mermaid" and compare the superior results obtained by an independent testing laboratory.



FEN

Amalgamated Chemical Corp., Philadelphia 25, Pa. Southern Representative: Robt. A. Bruce, P. O. Box 35, Greensboro, N. C. : : Makers of a complete line of Textile Finishes, Dyeing Agents, Penetrants and Softeners.

COHAMA ADAPTS "CROWN" TESTED HANDKERCHIEF RAYON FOR WOMEN'S, CHILDREN'S WEAR

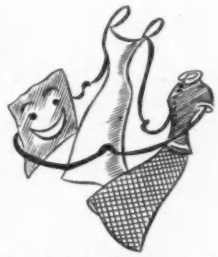
No. 14 of a series—from our files on the new "CROWN" Tested Plan

IF YOU'RE interested in finding new uses for rayon fabrics . . . and what converter isn't? . . . you'll be interested in this case history of a really successful double-duty fabric.

Some months ago we helped in the introduction of a handkerchief fabric of all spun viscose rayon. It was both strong and sheer . . . and when properly dyed and finished it met all CROWN* Tested requirements for handkerchief fabrics.

It wasn't long before this new fabric began to attract more than its share of attention! Cohn Hall Marx became convinced that this sheer spun rayon had undeveloped possibilities. They adopted it . . . called it "Hankasheer" . . . and began dyeing and printing it in hand washable colors for women's and children's dresses, blouses, nightgowns, pajamas, housecoats, and slips.

This fabric is so constructed that in spite of its sheerness, it stands up under rigid tests for tensile strength and seam slippage. Those tests . . . and some of the others each and every dye lot of the fabric must pass before being identified as CROWN Tested . . . are shown here:



Laundering temperature . . .	105° F.
Tensile strength dry	20 lbs.
Tensile strength wet	10 lbs.
Resistance to seam slippage .	15 lbs.
Dimensional Restorability . .	2%
Resistance to sun fading	10 hrs.

Where else could you find better proof of the effectiveness of the CROWN Tested Plan? Cohn Hall Marx discovered a fabric practically made-to-order for their purpose . . . a fabric that would deserve a prominent place in their line. So if you work with rayon . . . why not build consumer confidence the CROWN Tested way?

Plan NOW for your Share of Tomorrow's Business

For when tomorrow comes, it will bring a demand for better fabrics. Then the converter who has perfected his cloths . . . through the CROWN Tested Plan, for example . . . will be ready and able to supply this demand. Don't be caught unprepared for the future . . . make a place for *this* plan among your other post-war plans.

And at the same time, look into the possibilities of A.V.C.'s library of fabrics. This collection has been developed over many years, and offers significant data on the best possible use of rayon in fabrics. This library is for your convenience. You are invited to refer to it . . . and to consult with us . . . in solving your construction, weaving or dyeing problems.

NEW INFORMATIVE LABELING
Consumer Satisfaction under the "Three Tag" System
GREEN DISC for washable fabrics
RED DISC for fabrics that can be dry cleaned only
AMBER DISC for hand washable fabrics
CROWN TESTED RAYON FABRIC
WASHABLE
HAND WASHABLE

"Crown" Tested Rayon Fabric

This is a stabilized fabric. Tests predict it will not change visibly in color or in texture, nor in size more than 2% if instructions are followed. Samples of every dye lot of this fabric have been tested for stability and strength, according to minimum requirements set and maintained by

AMERICAN VISCOSE CORPORATION

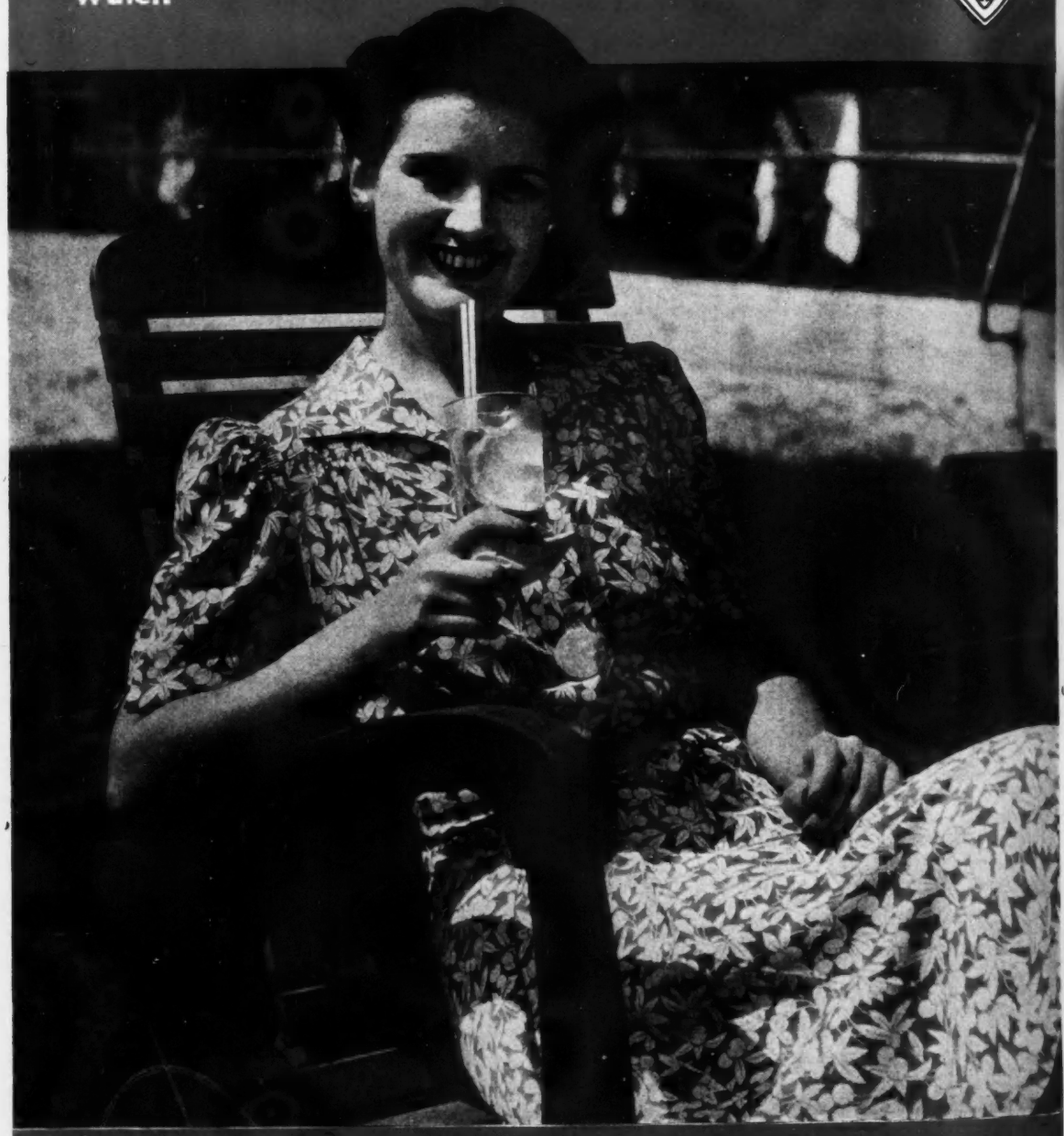
Producer of CROWN *Rayon Yarns and Staple Fibers*

Sales Offices: 350 Fifth Avenue, N. Y. C. 1; Providence, R. I.; Charlotte, N. C.; Philadelphia, Pa.

Trade Mark Reg. U. S. Pat. Off.

KELTEX is the modern thickening agent so widely used in Print Pastes, Direct Dye Printing (on Rayon), Discharge Work, Padding Operations, and Gum Water.

KELTEX
REFINED ALGIN PRODUCT



KELCO COMPANY

75 E. Wacker Dr., CHICAGO 1—31 Nassau St., NEW YORK 5—530 W. 6th St., LOS ANGELES 14

MEMO TO THE DYEHOUSE:

DEAR JIM, DID YOU SEE THIS AD?
WHY NOT CALL CAMPBELL
REGARDING OUR PROBLEM
DISCUSSED AT LUNCH TODAY—

Call Campbell
ETHONIC (Level Dyeing Acid)
AMIDAZO (Develop)
AMIDINE (Direct)
ACEKO (Acid)
CHROMAZINE AND CHROMACID Colors for Textile Printing
SOL-AMIDINE (Light-fast, Direct)
CAMACYL (For Acetate Rayons)
AMALTHION (Sulphur)
LAVOSAL (Fast to Salt Water and Washing)
KROMEKO (Chrome)
The Complete Campbell Line includes all dyestuffs for service fabrics and civilian needs
JOHN CAMPBELL & COMPANY, Inc.
75 HUDSON STREET • NEW YORK CITY

JOHN CAMPBELL & COMPANY, Inc.

ONYX

FOR BETTER LOOKING—BETTER WEARING FABRICS

OFFICIAL U. S. NAVY PHOTOGRAPH

JOURNEY'S END

A Marine safely at journey's end thanks to his parachute. Trained in the intricacies of its use, Marines are able to reach land safely, despite the hazards of war and the elements. His parachute has been brought to its present high state of efficiency by the ingenuity and skill of the American Textile Industry in cooperation with U. S. Navy experts. Not the least important step in the making of Marine parachutes is the processing and finishing of the fabric which helps make the parachute strong, flexible and durable. Onyx textile processing and finishing compounds have helped make, not only parachutes, but hundreds of other textile articles give better service in the many uses of Marine activities throughout the world.

If you have a processing and finishing problem let Onyx Research and technicians work it out with you. They have helped many mills and dyers, they may be able to help you. Your inquiries are solicited.

onyx onyx

ONYX OIL & CHEMICAL COMPANY

JERSEY CITY, N. J.

New England Office: 511 Westminster Street, Providence, R. I. • Charlotte Office: 124 East Third Street, Charlotte, N. C.
Mid-Western Representatives: Maher Color & Chemical Co., Chicago Ill.; Los Angeles, Calif.
In Canada: Onyx Oil & Chemical Co., Ltd., Montreal, P. Q.; Toronto, Ont.

XYNOMINE—PHI-Φ-SOL—ONYXSAN—ETERNALURE—REPEL-O-TEX

QUALITY

QUALITY

QUALITY

GDC

This rigorous war has made us return to basic principles, to the frugal habits of our forefathers. * Life has once more become a serious business. Rationing has made us exercise strict economies—develop a vigilant sense of values. We are back to times of plain living, where every item must have a utilitarian purpose, be able to meet strenuous demands. * * Only those who think and work in terms of unrelenting quality can hold a place in this all-exacting order of things.

GENERAL DYESTUFF CORPORATION

In Rain or Snow or Muggy Heat

Wherever they are — wherever they may go — our fighting men have the constant protection of fabrics finished to meet the needs of global war. With experience born of peacetime service but with a resourcefulness geared to the needs of war, Arkansas takes pride in producing at top speed for textile processing and finishing plants whose fabrics must meet rigid government specifications.

FUNGICIDES for all types of Government Fabrics

Highly Efficient — Non-Toxic — Non-Irritating

FUNGICIDE M: a single product combining a mildew inhibitor and water repellent for producing a mildewproof water repellent finish on cotton in one operation.

FUNGICIDE P. G.: an anti-mildew agent for mildewproofing cotton by the two bath process.

FUNGICIDE G: used in conjunction with water repellents in a one bath treatment to mildewproof cottons and impart a water repellent finish.

FUNGICIDE A: for cloth coating processes — dissolved directly in the resin solution.

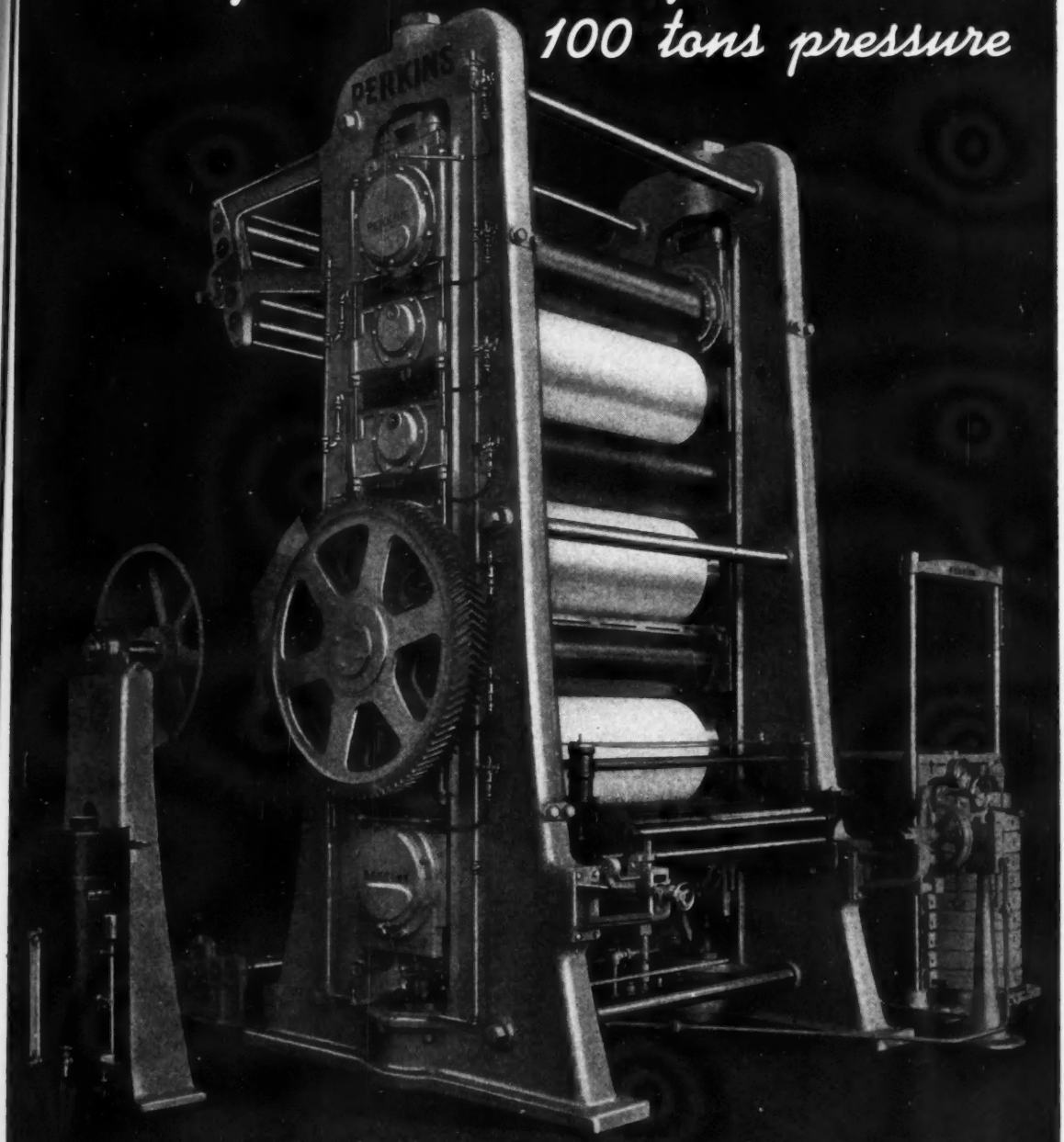
FUNGICIDE P: made expressly for use in the pigment impregnation process.

ARKANSAS CO. INC., NEWARK, N. J.

Established over 38 years

PERKINS *hydraulic rolling and chasing calender*

100 tons pressure



B. F. PERKINS & SON, Inc.

HOLYOKE, MASS., U.S.A.

LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

WHERE *Alro* PRODUCTS ARE BORN

Exterior of Our New Research Laboratory

A Section of Our Organic Research Laboratory

THIS COMPANY not only manufactures textile chemical specialties; but it also *originates* them. To this end we have recently built a new addition to our plant to house a most complete and most modern research laboratory.

Here a staff of chemists, under a competent research director, devotes its entire time to the creation and perfection of new synthetic chemicals to enable the textile industry to produce better fabrics at less cost. Already the Alro Line is impressive. The new Alro Laboratory will greatly facilitate and expedite its growth and its usefulness.

Let ALROSE help solve your textile finishing problems.

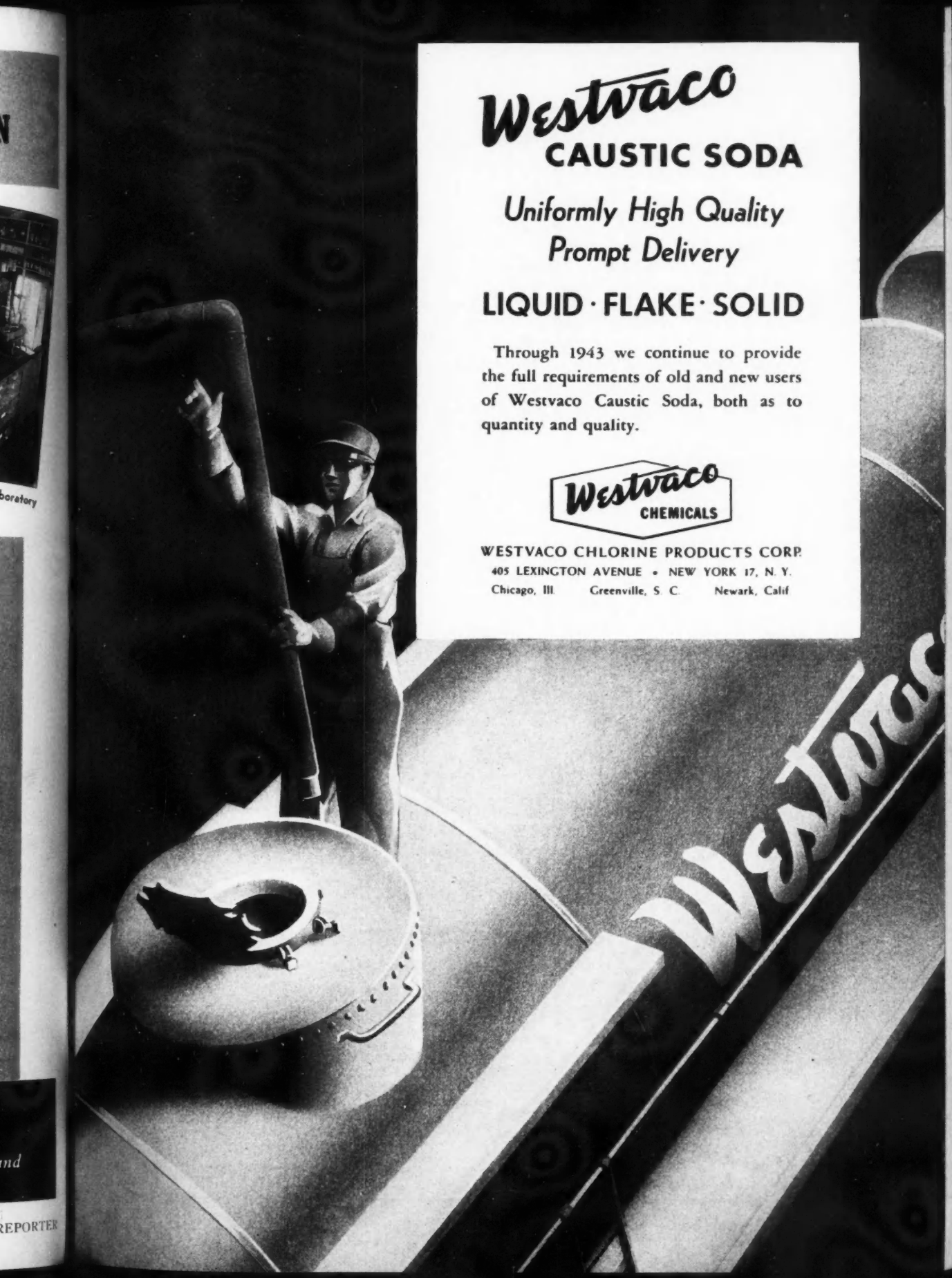
★ ★ ★

THE ALRO LINE

- Wetting Agents
- Rewetting Agents
- Synthetic Detergents
- Cation Softeners
- Waterproofing Compounds
- Mildewproofing Agents
- Flame Retardants
- Printing Gums
- Glycerine Substitutes
- Synthetic Waxes
- Emulsifiers for Oils and Waxes
- Kier Boiling Assistant (special)

ALROSE CHEMICAL COMPANY

Manufacturers of Research Products • *Providence, Rhode Island*


Westvaco
CAUSTIC SODA
Uniformly High Quality
Prompt Delivery
LIQUID · FLAKE · SOLID
Through 1943 we continue to provide the full requirements of old and new users of Westvaco Caustic Soda, both as to quantity and quality.
Westvaco
CHEMICALS
WESTVACO CHLORINE PRODUCTS CORP.
405 LEXINGTON AVENUE • NEW YORK 17, N. Y.
Chicago, Ill. Greenville, S. C. Newark, Calif
Westvaco

HERE'S ONE TEST OF Fybrol

THAT ONLY *you* CAN MAKE

You know that for over 30 years FYBROL has been doing a real job in woolen and worsted processing. You know that this easy-to-use combing and spinning oil conforms to all Committee standards as to fibre lubricity and scourability. And you know that constant tests in our own laboratories and in the exacting field of daily production have brought about improvements which make FYBROL the one fibre lubricant that imparts all these features to your yarns . . .

1. *Lofty and resilient fibres*
2. *Better "handle" immediately apparent*
3. *Superior scourability*
4. *Guaranteed non-rancid*
5. *Exceptionally high lubricity*
6. *Increased spinning yields*
7. *A smoother sliver*
8. *Uniform yarn weights*

But there is one test which only YOU can make. That is to give FYBROL a thorough checkup *under your own mill conditions.*

Because we know how well FYBROL will measure up to the requirements you set, we ask you to send for a trial drum. Just have this coupon filled out and mailed.

***Textile Chemicals Division* . . . L. SONNEBORN SONS, INC.**

88 Lexington Avenue, New York 16, N. Y.

Fybrol *the COMPLETE Wool and Worsted Oil*

FILL OUT AND MAIL THIS COUPON FOR A DRUM FULL OF HELP

Textile Chemicals Division
L. Sonneborn Sons, Inc.
88 Lexington Ave.
New York 16, N. Y.

Gentlemen: Please ship us a trial drum of FYBROL as checked below:

☐ No. 1214 (White oil base)
☐ No. 1216 (Non-oxidizing pale oil base)

Name.....Title.....

Firm Name.....

Street Address.....

City.....Zone.....State.....

ADR

QUINACRINE

One of National's many contributions to our nation's war efforts

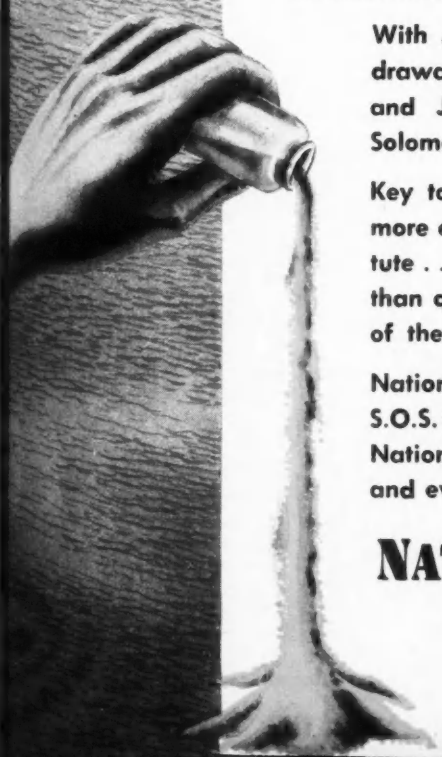
Key to Survival in the Solomons

Yankee courage, brains and downright heroism took Guadalcanal, Munda and other important bases from the Japs. But the deadly malarial mosquito nearly took away our costly gains.

With Java quinine destroyed in the "scorched earth" withdrawal of the Dutch, malaria began to annihilate Americans and Japs alike. With quinine unobtainable, to hold the Solomons would have cost more lives than it took to win them.

Key to survival in this malaria-infested hell hole . . . even more essential than bullets . . . is a man-made quinine substitute . . . QUINACRINE. This bright yellow powder, more potent than quinine, saves life for a few cents' cost, yet carries none of the unfavorable after-effects of quinine.

National Aniline immediately answered our Government's S.O.S. for large production of this vital quinine substitute. Today National Aniline is proud of its growing part in supplying vast and ever-increasing quotas of life-saving QUINACRINE.



NATIONAL ANILINE DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET — NEW YORK, N. Y.

BOSTON · PHILADELPHIA · GREENSBORO · CHATTANOOGA
PROVIDENCE · SAN FRANCISCO · ATLANTA · PORTLAND, ORE.
CHICAGO · CHARLOTTE · NEW ORLEANS · TORONTO

Pioneering
WITH Pigments
—one of a series of developments illustrating the advantages of Aridye* pigmented colors in new and significant applications

Camouflage Colors—AN ILLUSTRATION OF WHY YOU SHOULD USE PIGMENTS

There are many textile printing and dyeing problems to which pigments offer the best solution. Camouflage strips are an excellent wartime example; here, burlap and osnaburg must be finished and dyed to meet government specifications covering penetration, weather-fastness, mildew resistance, gloss, imprint, solubility, spontaneous combustion and infra-red reflectance.

Were it not for the infra-red reflectance, weather-fastness, and the handling difficulties of burlap, these specifications would present no unusual problems. But conventional dyestuffs have low reflectance of infra-red rays, and their presence would be detected by the enemy through the use of infra-red photography. Camouflage strips pigment-dyed with selected pigments, however, elude detection under infra-red photography as well as when they are viewed by the naked eye; and the weather-fastness of these pigments is such that, even on burlap, they meet the most stringent weather-fastness requirements.

Camouflage strips, therefore, exemplify an application which clearly calls for pigments—and finishers have chosen Aridye camouflage colors, developed expressly for this purpose, for more than 50 million yards of this fabric!

Especially when extreme lightfastness or washfastness or ease of application are desired, there are many other instances where superior results can be obtained on cotton, rayon, acetate and mixtures of these fibers through the use of pigments. The question, in deciding between conventional dyestuffs and pigments, is which method gives the most satisfactory results or is more efficient for a particular purpose or is the less expensive. Frequently, pigments will be the answer; and a considerable increase in the use of pigments for plain shade dyeing can be expected after the war.

When you are faced with a printing or dyeing problem, consider pigments as a possible solution; and for complete information about pigment colors, or for technical assistance in their application, consult the leaders in pigment experience and research—write to Aridye Corporation, a subsidiary of Interchemical Corporation, Fair Lawn, New Jersey.

An illustrated, detailed folder has been prepared on the dyeing of camouflage strips with Aridye pigment colors, and will be sent without obligation to all finishing plants requesting it. Send for your copy today.

*Reg. U. S. Pat. Off.

Aridye TEXTILE COLORING MATERIALS

ARIDYE CORPORATION • SUBSIDIARY OF INTERCHEMICAL CORPORATION • FAIR LAWN, N. J. • ROCK HILL, S. C. • PROVIDENCE, R. I.

Leading the field...

PERMA-PAR PRODUCTS

PERMA-PAR-R*

A most efficient, substantive, odorless, cation-active softener that does not stain the whites.

We suggest that you prove this product in your plant.

*Reg. U. S. Pat. Off.

MANUFACTURERS OF CHEMICAL SPECIALTIES OF PROVEN MERIT FOR THE TEXTILE AND OTHER INDUSTRIES

REFINED PRODUCTS COMPANY

LYNDHURST • NEW JERSEY

New England Representative: E. L. LEGG, P. O. Box 597, Providence, R. I.

New! DU PONT SOLOMATIC PROCESS

Continuous *Bleaching of Raw Wools with Sodium Peroxide . . . Low-Cost Bleaching Method Provides Softer and Loftier Wools*

HERE it is at last. A sodium peroxide bleaching process for raw wool that is *continuous*. Not just a more efficient, convenient system, but a bleach that gives better results at substantial savings.

The "Solomatic" Process is designed for the production of peroxide bleaching solution from Du Pont DFF "Solozone" (sodium peroxide). "Solozone" is poured into a hopper of a mixing tank, where it is blended with spent bleach liquor and sulfuric acid piped up through a proportioning pump.

Except for the initial change of the peroxide into the feeder, the entire operation is automatic. Now being used for peroxide bleaching in the continuous wool scouring train, where it permits replacement of hydrogen peroxide.

DU PONT SOLOMATIC PROCESS gives softer and loftier wools. Because of better control, it provides a more uniform bleach. And it saves in many ways . . . on chemicals . . . on supervision . . . on labor.

Complete details about this new and significant Du Pont contribution to the textile industry are contained in the booklet: "Du Pont Solomatic Process." Write for a copy today. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington, Delaware.

BACK THE ATTACK — WITH WAR BONDS

DU PONT

PEROXIDES

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Mister—you're getting paid in DYNAMITE!

LET'S NOT KID OURSELVES about this. Our pay envelope today *is* dynamite.

If we handle it *wrong*, it can blow up in our face . . . lengthen the war . . . and maybe wreck *our* chances of having happiness and security *after* the war.

The wrong way to handle it . . . and why

The wrong way is for us to be good-time Charlies. To wink at prices that look too steep . . . telling ourselves we can afford to splurge.

We *can't* afford to—whether we're business men, farmers, or workers. And here's why:

Splurging will boost prices. First on one thing, then all along the line.

Then, wages will have to go up to meet higher prices. And higher wages will push prices up some more . . . faster and faster, like a runaway snowball.

The reason this can happen is that there is more money in pay envelopes today than there are things to buy with it. This year, we Americans will have *45 billion* dollars more income than there are goods and services to buy at present prices. *45 billion dollars extra money!*

That's the dynamite!

The right way to handle it . . . and why

Our Government is doing a lot of things to keep the cost of living from snow-balling.

Rationing helps. Price ceilings help. Wage-and-rent stabilization helps. Higher taxes help. They're *controls* on those dangerous excess dollars.

But the real control is in our hands. Yours. Mine.

It won't be fun. It will mean sacrifice and penny-pinching. But it's the only way we can win this war . . . pay for it . . . and keep America a going nation afterwards.

And, after all, the sacrifice of tightening our belts and doing without is a small sacrifice compared with giving your life or your blood in battle!

Here's what You must do

Buy only what you absolutely need. And this means absolutely. If you're tempted, think what a front-line soldier finds he can get along without.

Don't ask higher prices—for your own labor, your own services, or goods you sell. Resist pressure to force YOUR prices up.

Buy rationed goods only by exchanging stamps. Shun the Black Market as you would the plague.

Don't pay a cent above ceiling prices.

Take a grin-and-bear-it attitude on taxes. They must get heavier. But remember, these taxes help pay for Victory.

Pay off your debts. Don't make new ones. Getting yourself in the clear helps keep your Country in the clear.

Start a savings account. Buy and keep up adequate life insurance. This puts your dollars where they'll do you *good*.

Buy more War Bonds. Not just a "percent" that lets you feel patriotic, but enough so it *really* pinches your pocketbook.

If we do these things, we and our Government won't have to fight a post-war battle against collapsing prices and paralyzed business. It's *our* pay envelope. It's up to *us*.

KEEP PRICES DOWN!

Use it up • Wear it out
Make it do • Or do without

This advertisement, prepared by the War Advertising Council, is contributed by this Magazine in co-operation with the Magazine Publishers of America.

Indigosol Grey IBL

for Bluish tone Greys

INDIGOSOL Grey IBL produces clear, bluish-tone Greys of very good fastness for printing, dyeing and padding. It can be shaded with any of the Indigosol Yellows, Orange or Browns to obtain any of the shades of Grey desired.

One of its most important characteristics, in addition to its excellent penetration of heavy goods, is that it produces very level shades which are well covered *even in the lightest tones.*

INDIGOSOL Grey IBL is readily soluble and belongs to the class of Indigosols which develop easily.

Also

Pharmasol Brown GRNN

Yellower and brighter in shade

Better Wash Fastness

CARBIC COLOR AND CHEMICAL CO., INC.

451-453 Washington Street, New York City

BRANCHES:
PHILADELPHIA
PROVIDENCE
HAMILTON, ONT.
CHARLOTTE, N. C.

IMPORTERS OF THE MANUFACTURES OF
DURAND & HUGUENIN S. A.
BASEL, SWITZERLAND

EXCLUSIVE DISTRIBUTORS OF
PHARMASOLS
PHARMOLS
PHARMACINES

Representative: Los Angeles (Hathaway Allied Products)

AMERICAN DYESTUFF REPORTER

A. P. HOWES
Publisher

LOUIS A. OLNEY, D.Sc.
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NORMAN A. JOHNSON, B.T.C.
Managing Editor

MYRON D. REESER
Advertising Manager

Official Publication of the Proceedings of the American Association of Textile Chemists and Colorists

OCTOBER 25, 1943

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Contents

Contents of previous issues can be found by consulting the Industrial Arts Index at your library

• Special Articles

A Simplified Discussion of Color and Constitution of Azo Dyes 455
W. B. Reynolds

Top Dyeing and Blending 461
H. E. Meinelt

The Future of Finishing 462
J. G. Evans

War Born Paints will Improve Dyehouse Efficiency and Greatly Facilitate its Maintenance 472
John Winters Fleming

• Departments

Trade Notes—New Products 468

• Proceedings of the American Association of Textile Chemists and Colorists

Fourth Annual Intersectional Contest P458

Unemployment Register P459

Calendar of Coming Events P460

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AMERICAN
DYESTUFF REPORTER

VOLUME 32 OCTOBER 25, 1943 NUMBER 22

A Simplified Discussion of Color and

CONSTITUTION OF AZO DYES

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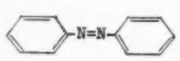
Graduate Department of Applied Science
University of Cincinnati

THE stupendous molecules with which the azo chemist is prone to confound his colleagues appear, indeed, terrifying at first glance. However, when critically analyzed they are relatively simple and it is possible to predict their color with considerable accuracy. Such prediction requires a cursory knowledge of resonance, a little information about "insulating" or "blocking" groups, and knowledge of a few empirical facts about the depth of shades to be expected from various azo intermediates in monazo combinations.

A rigorous treatment of the subject of resonance requires the use of quantum mechanics. Such mathematical treatment is highly complicated, even for simple molecules, and it has not been applied successfully to complicated dye molecules. Fortunately, however, the dye chemist can make use of the concept of resonance without being too much concerned with the mathematics involved in a quantitative treatment of the subject.

Actually the mathematical treatment of resonance is simply the application of quantum mechanics to concepts of the structure of organic molecules that have been developing among organic chemists for many years.[1] Stated simply, the idea of resonance implies that the true state of an organic molecule is not represented by any single valence-bond structure that might be written but rather that it is intermediate between two or more different structures. Thus the true state of azo benzene, the simplest azo chromogen,[2] is not represented by the structure (A) but rather is intermediate among many structures, two of which are (B) and (C):

A)



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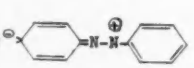

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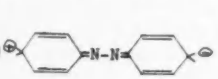
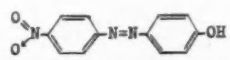


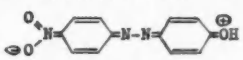
When it is possible to write structures such as (B) and (C) there is good likelihood that a molecule will absorb light in the visible region of the spectrum and hence be colored. The azo chemist has learned that the number and type of resonance structures that he can write for any molecule will tell him a great deal about the hue and intensity to be expected. In general, he knows that if he can write structures having long chains of conjugated (alternating double and single) bonds the molecule is likely to absorb the longer wave lengths of light and hence be fairly deep in hue. Furthermore, he knows that the stability of any structure that he writes determines how much that structure contributes to the sum total of the molecules and from that he can predict something about intensity as well as hue.

In the example of azo benzene, structure (A) given above is by far the most stable. In both structures (B) and (C) carbon is made to assume either a positive or a negative charge. All of our experience teaches us that carbon is reluctant to do this and we would expect the contribution of (B) and (C) to be small and the compound to have low color intensity.

If, instead of azo benzene, we consider the simple azo dye prepared by coupling diazotized paranitraniline with phenol:



we find that we can write the resonance structure:



[1] A. Kekule, Ann., *162*, 72 (1872); H. E. Armstrong, Phil. Mag., (5) *23*, 73 (1887); A. Baeyer, Ann., *245*, 103 (1888); A. Claus, J. Prakt. Chem., *37*, 455 (1888); J. Thiele, Ann., *306*, 87 (1899); A. Baeyer, Ann., *354*, 152 (1907); E. Q. Adams and L. Rosenstein, J.A.C.S., *36*, 1472 (1914); F. Arndt, E. Scholz, and P. Nachtwey, Ber., *57*, 1903 (1924); F. Arndt, ibid, *63*, 2963 (1930); C. K. Ingold, Chem. Rev., *15*, 225 (1934); C. R. Bury, J.A.C.S., *57*, 2115 (1935).

[2] The term "chromogen" is used as defined by Witt in the development of his well known color theory. A chromogen is a simple parent molecule containing a chromophore but devoid of auxochromes.

This type of structure contributes an appreciable amount to the state of the molecule since oxygen readily assumes the charges indicated. The result is that the molecule is deeper in shade and more intense than the parent azo benzene. From this sort of consideration one can readily see that auxochromic groups function simply by increasing the contribution to the state of the molecule of certain highly conjugated resonance structures.

In classical mechanics it would be presumed that a molecule which absorbs light contains an oscillator having a frequency identical with that of the light absorbed. This concept has sometimes been loosely applied to the idea of resonance and the frequency of light absorbed related to a so-called "resonance frequency." The use of this idea is probably unjustified, however, and it is better to consider that the wave lengths of light absorbed are determined by the energy differences possible between the ground state and the activated state of the molecule.

An insulating or blocking group is an atom or group of atoms which diminishes the contribution of resonance structures involving conjugation between parts of a molecule on opposite sides of the group. For example, consider two parts of a molecule A and B connected by an atom or group of atoms X to give the molecule A-X-B. If it is impossible to write resonance structures wherein A is connected to B through a conjugated system of double and single bonds then X is an efficient insulating group. On the other hand the grouping X may actually enhance the contribution of resonance structures involving conjugation between A and B. In such examples X is not an insulating grouping. In many examples the grouping X may neither enhance nor completely prevent conjugated resonance structures. It may thus possess varying degrees of efficiency as an insulating grouping depending upon the extent to which it diminishes the contribution of the conjugated resonance structures. The concept of insulating groupings is important in predicting the shade of poly-azo molecules and will be illustrated further in that connection.

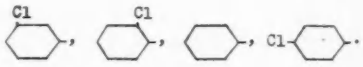
Now we shall pass to a consideration of some of the experimental facts that are of great help in predicting the shade of complex azo dyes. The most helpful fact that one gleans from experience with azo molecules is that the shade to be expected is usually a simple summation effect of properties that are inherent to the intermediates from which the dyes are prepared. Thus dyes prepared by coupling diazotized paranitraniline with various coupling components are invariably deeper in shade than corresponding dyes prepared from diazotized aniline. This establishes paranitraniline as a "deeper"[3] azo component than aniline and one can be reasonably certain that in comparing any two dyes, one prepared from diazotized aniline and one from diazotized paranitraniline, the dye from the latter will have a deeper shade.

Similarly, when a diazotized base is coupled with two different coupling components and one of the dyes obtained is found to be deeper in shade than the other, it can be assumed that the coupling component which gave the deeper shade dye will also give dyes of deeper shade when other bases are used.

As a result of the above phenomena it is possible to arrange series of the common bases and the common coupling components in the order of the inherent depth of shade the various intermediates impart to dye molecules. When this is done a few generalizations about the effect of auxochromic groups can be made. (An auxochromic group is a color "intensifying" group i. e. it increases the color strength. It may bring about a lightening of shade in which instance it is termed "hypsochromic" or it may produce a deeper shade in which instance it is "bathochromic.")

Auxochromic groups in the ortho and para positions to the azo chromophore are very much more effective than the same groups in the meta position. This is very simply explained on the basis of resonance since it is only when auxochromic groups are in the ortho and para positions to the azo grouping that quinoid-type resonance structures involving the auxochrome can be written. Often auxochromic groups in the para position have a greater effect than corresponding groupings in the ortho position, particularly if the grouping is large. This may be due partially to steric hindrance of the ortho quinoidal resonance structures and hence a lessening of their contribution to the state of the molecule.

The effect of a chlorine group is hypsochromic in the meta and ortho positions and slightly bathochromic in the para position. Thus the order of depth of shade is:



A nitro substituent brings about a bathochromic effect, particularly in the para position. Alkoxyl groups are powerfully bathochromic in para and ortho positions. Amino, mono and dialkylamino, and to a lesser extent acyl amino groupings are all bathochromic in ortho and para positions.

In Table I a few of the common bases and coupling components are listed in the order of depth of shade to be expected from them. Light shades are obtained by coupling intermediates near the top of each list while deep shades are obtained from intermediates near the bottom of the lists. Medium shades are obtained either by coupling intermediates near the center of each list or by coupling intermediates from the top of one list and the bottom of the other.

Dis-azo dyes are usually divided into four types. In primary dis-azo dyes two molecules of the same or different bases are coupled with one molecule of a coupling component capable of coupling in two positions. Using the familiar method of indicating an amine diazotized and coupled with a coupling component by an arrow with the head pointing to the coupling component, the primary dis-

(Continued on page 465)

[3] Depth of shade increases in the order yellow, orange, red, violet, blue, green.

PROCEEDINGS OF THE

American Association of Textile Chemists and Colorists

OCTOBER 25, 1943

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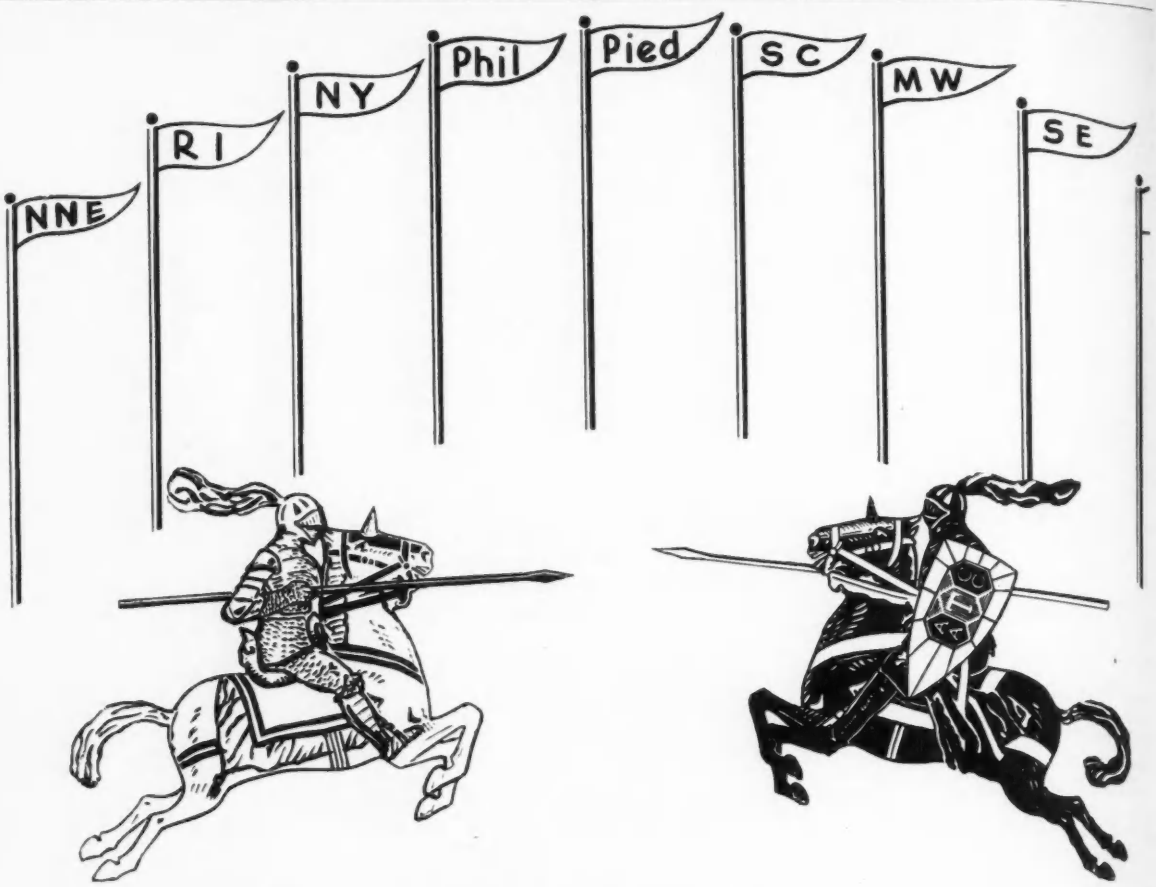

FOURTH ANNUAL

Intersectional Contest

Downtown Athletic Club, 19 West St., New York, N. Y.

October 22, 1943

WINNERS

First—Philadelphia Section

Second—Northern New England Section Third—New York Section

Abstracts of the papers presented will appear in the November 8th issue. The complete papers will appear in the November 22nd issue.

UNEMPLOYMENT REGISTER

Members of this association, who are without employment, should forward a statement as to their qualifications and experience. This information will subsequently appear on these pages with an identifying key number. Employers are also requested to file with the American Dyestuff Reporter any vacancies which may occur in their business.

NOTICE TO EMPLOYERS

Personal Histories and Employment Records of the following applicants are on file at the office of the American Dyestuff Reporter. Prospective employers may examine them without obligation.

Key: A—Laboratory and research; B—Dyeing or printing; C—Finishing; D—Sales; E—Instruction; F—Executive.

NOTE: PERSONS WHO HAVE OBTAINED EMPLOYMENT SHOULD NOTIFY THE AMERICAN DYESTUFF REPORTER AT ONCE.

A-2

Education—Graduate, Lowell Textile Institute, B.T.C., 1933.
Experience—Experienced as textile chemist, chemist-spotter, agricultural chemist and U. S. Army inspector on cotton, rayon, woolens and worsteds. Seeks research or control position with future. New England preferred.
Age 34; married; references.

A-3

Education—B.S. in chemistry, Lehigh University.
Experience—Experimental engineer and analytical chemist, 8 mos.; assistant superintendent of silk corporation, assisted in planning and directing production, in charge of laboratory, technical work, personnel, purchasing, etc., 2 years; inspector of ordnance material, to the present. Seeks position as chemical engineer or chemist.
Age 26; single; references.

A-B-C-F-3

Education—High school and full apprenticeship.
Experience—Practical Dyer and finisher. Long experience on specialties for men's wear trouser trade in cottons, cotton and rayon mixtures and cotton and Celanese. Is disposing of interests in progressive finishing plant and seeks position as manager, assistant manager or technical advisor. Thoroughly understands requirements of Quartermaster, especially on herringbone constructions.

C-1

Experience—Experienced as assistant finisher, finisher and superintendent of finishing since 1923. Experience on automobile cloth, boucle overcoatings, high grade men's wear worsted, low grade woolens, medium grade plaid-back overcoatings, fleece finish overcoatings. Bolivias, kerseys, medium-grade men's piece dye suitings, uniform cloth, flannels, ladies' dress goods and coatings, government serge and elastique fabrics, marine wool, flannel shirtings.
Age 37; married, 3 children; references.

C-2

Education—Completed course in textile engineering and chemistry except for final half-year at Clemson College.
Experience—11 years of experience in finishing operations, including 8 years as overseer. Experienced on all types of cotton cloths. Experienced on pure finishes, backfilling, Sanforizing, pre-shrinking, and application of several types of water repellent finishes. Seeks position as overseer of finishing department.
Age 32; married; references.

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APPLICATION BLANKS
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and corporate
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from the secretary

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Lowell Textile Institute, Lowell, Mass.

• CALENDAR • OF COMING EVENTS

Meeting, Philadelphia Section, Hotel Philadelphian, Philadelphia, Pa., October 29, 1943.

Meeting, Rhode Island Section, October 29, 1943.

Meeting, Piedmont Section, Hotel Charlotte, Charlotte, N. C., November 5, 1943.

Meeting, New York Section, Downtown Athletic Club, 19 West Street, New York City, December 3, 1943.

Meeting, Southeastern Section, Atlanta Athletic Club, Atlanta, Ga., December 4, 1943.

TOP DYEING AND BLENDING*

H. E. MEINELT

SLUBBING is a continuous, untwisted sliver of combed wool fibers weighing from 4½ to 8 oz. per 10 yd. Top is approximately 300 yd. of slubbing wound in a ball form. Top dyeing and slubbing dyeing are synonymous terms. There are circumstances where yarn or piece-dyeing cannot give similar results. When yarns of mixed colors are wanted, slubbing dyeing and blending is the only method. Also fast-dyed fine count worsted knitting yarns are invariably top dyed. Advantages in dyed solid shade yarns are uniformity of shade, more consistent matches to the standard, and better fiber penetration. It is usual to dye large lots by the slubbing method, whereas small lots are generally yarn dyed.

A top dyeing and blending plant can be divided into dyeing department, pad making department, and gilling room. Mills having their own combing plant usually do the gilling in this department. The pad matching and laying out of the color blends would come under the jurisdiction of the superintendent of dyeing.

There exist several points of view in regard to the system to be used in top dyeing and blending. Assume the order calls for 2500 lb. top, being 700 lb. black, 1100 lb. medium blue and 700 lb. light slate, and that the maximum load of our dye kettles is 500 lb.

FIRST SYSTEM

Under the first system, one kettle of 500 lb. and one of 200 lb. black would be dyed; the same for the light slate; two kettles of 500 lb. and one of 100 lb. of the medium blue. The dye lots after dyeing are backwashed, dried and then blended, or as in one plant, the lots put up wet in rear of backwasher and run through in proportion and blended on gilling head of backwasher. This system demands perfect dyeing. It allows for no adjustment in final shade of mixture. As a result the shades are not as uniformly accurate as in a system in which there is afforded the opportunity to adjust the shade. Seven kettles were required to dye 2500 lb. If these kettles were loaded to capacity, 3500 lb. could be dyed. This gives us a 30 per cent loss in labor, and almost as much in steam and power. There is also an additional loss since the proportion of dye and assistants is larger on less than capacity amounts.

The peak of dyehouse efficiency is in dyeing capacity lots. With this system there must be dye kettles of various capacities to keep the steam costs and dyeing costs to a minimum. The system has the advantage that there are no dye lots of colored wool in storage, which saves floor space. It operates to best advantage where variety of shades are few.

SECOND SYSTEM

Under the second system a series of basic shades must be established. The choice of these shades, and how many, is very important. Wherever possible mixtures are made up using the basis colors decided upon. This means that one basic color will be used in a number of different mixtures, some more than others. Now for 700 lb. of a basic color two full kettles will be dyed, knowing that the extra 300 lb. will be used shortly. This keeps the dyehouse operating costs at the lowest possible level. It also provides some colors on hand to adjust shades. Of course, some discretion must be used in operating such a system. If one needs 100 lb. of a shade that will probably not be used again for some time, it is foolish to dye more. It is possible to operate such a system carrying about one-half week's dyeing production ahead. As the season comes to an end this can be whittled down to almost nothing. This, unquestionably, is the most efficient system.

There are various compromises of these two systems in use. Some mills dye the exact quantities desired, match pads and, if a shading color is needed, dye this and blend in.

The essential requirements in top dyeing are: A uniformly dyed top as to shade, inside, center and outside; and an undisturbed sliver.

MACHINES

Machines for top dyeing can be divided as follows: Slubbing is dyed:

(1) In the form of a hank, typified by Klauder-Weldon.

(2) In top form inserted on perforated spindle, dye liquor circulating through the top, typified by Franklin, Obermaier, Frederichs, etc.

(3) In top form, top being placed in pots, dye liquor circulating up and down through top, typified by Longclose, Triumph, etc.

(4) Wound on a perforated jack spool, as made by Abbott.

Wetting and scouring agents are unnecessary in most instances for good top dyeing. Depending on the shade and type of work, chrome or milling colors will generally

(Concluded on page 467)

*Reprinted from *Phi Psi Quarterly*.

THE FUTURE OF FINISHING*

J. G. EVANS, M.Sc.(Tech.)

I.C.I. (Dyestuffs), Ltd.

THE main factors which will influence the trend of finishing are: (1) The advent of new fibers; (2) New finishing agents; (3) The quality consciousness of the public; (4) The increase in the scientific outlook of the trade.

We can review these briefly as follows: —

(1) THE ADVENT OF NEW FIBERS

The age of man-made fibers is upon us. The annual production of rayon staple in 1930 was some 3,000 tons and now is estimated to be 1,000,000 tons per annum. Economic nationalism and wartime exigencies have, of course, played no small part in accelerating the pace of this development, but it must be recognized that the intrinsic merits of the fibers and their contribution to style and handle, made such progress possible. If man's early attempt at large scale production of fibers has been so successful, what will the future have in store? Wherever we turn, we see research on the production of new fibers. Nature's supplies of protein, whether it be from fish or mammal, plant or seed, are being explored and developed in such fibrous forms as Lanital or Aralac or Soylon. More striking still, is the patient building of complex structures from the simple organic bricks, which the more systematic exploitation of our mineral wealth has provided and which has ultimately given birth to the synthetic fibers, nylon, Vinyon and Saran. Nor are some of these new fibers mere substitutes for natural fibers. They have solid merit of their own, which will earn them a place in the textile world at large. New fibers bring their own particular problems of manipulation, cloth structure and finishing. This can be briefly illustrated by reference to some of the properties of the most interesting of synthetic fibers—nylon, which the textile trade in general and the hosiery trade in particular, are waiting to exploit with some pardonable impatience. It has its own peculiar dyeing properties, it needs a setting treatment, it has a low water uptake—a virtue in many respects, but making aqueous treatment more difficult. Fabrics are somewhat waxy to the feel and drape is not good. On the other hand, they respond very readily to mechanical processing and easily lend themselves to permanent effects. In short, a new fiber of this nature calls forth the technical skill of all sections of the trade, not least the finisher.

This leads to the first conclusion, which can be drawn from the effect of new fibers on finishing, viz., they will make it much more necessary for the finisher to have a scientific outlook. It will be desirable for him to study much more closely than in the past the structure and properties of the new fibers, if he is to choose those treatments most suitable to the fiber.

The second important effect of the new fibers will be to break down the barriers between the wool and the cotton industries. This has already commenced, as a number of fibers are becoming increasingly common to both industries. The cotton industry is producing fabrics, which simulate closely some of the productions of the wool industry. This in turn has its influence on the wool trade, particularly as the more rapid methods of production of the cotton trade are a heavy economic advantage and will result in some production changes in the former industry. On the other hand, the mixtures of the older fibers with the new means that the cotton industry is dealing with increasing amounts of fabric containing wool and this industry too has to learn new technique. This trend of one section of the industry into the other is by no means undesirable. Each can learn from the other.

Thirdly, while some new fibers will call for new finishing methods, others, already colored by pigmentation in the mass, may in their various forms eliminate some finishing, indeed there is evidence already that some will compete with coated fabrics for upholstery purposes and in woven monofil form against certain types of netting and similar structures.

(2) NEW FINISHING AGENTS

For some time at any rate, the most powerful factors which will influence finishing will be the new finishing agents. Indeed, the situation is almost parallel to that of the dyeing trade when natural dyes were about to be displaced. At present, the finishing trade largely uses natural products or simple modifications of them, but now an increasing number of new synthetic finishing agents are undergoing development.

The last fifteen years have seen some remarkable developments in the field of long chain chemistry, in which various types of fatty chains or condensates containing them, have been solubilized in different ways to provide three main types of product, the anion-active agent, exemplified by the sulfated fatty alcohols, the cation-active type illustrated by quaternary ammonium salts and the non-

*Extracts from address by J. G. Evans to the Lancashire Section of the Textile Institute (England).

ionogenic class, of which the polythanoxy derivatives are representative. These in their various forms have found application as wetting agents, detergents, lubricants, softening agents, dyeing assistants, water repellents, to mention a few of their uses, in which capacities they have shown some marked advantages over products hitherto used.

Striking as the achievements have been in this field, they are likely to be surpassed in the exploitation of high polymers. It has become commonplace to refer to the present as the dawn of the plastic age. Certainly, synthetic polymers in one form or another will occupy a very prominent place in human activity for some time to come.

A catalogue of their uses would be both too lengthy and out of place in this discussion, but the textile trade will handle them as constructional materials, as synthetic fibers and as finishing agents. The application of synthetic polymers as finishing agents is not new and its most notable success to date has been the well-known urea-formaldehyde process of producing a desirable handle and crease-resistant properties on spun rayon in particular—an example of a most timely discovery, which has done much to contribute to the development of spun rayon, and is a reminder that as future new fibers appear, the finisher can do much in their successful development by the discovery of appropriate finishes.

While the application of high polymers as finishing agents may not be new, it has been relatively limited so far as number or variety is concerned due to the inavailability of appropriate forms in which to apply them. Recently, however, the solubilization of some natural polymers, exemplified by cellulose derivatives and the synthesis of a great number of new polymers, many capable of being produced in the form of aqueous dispersion, has opened the way to rapid exploitation by the textile trade, once these dispersions are freely available. The choice of new polymers is considerable, when one contemplates the advances made in the vinyl and polyamide fields alone, represented by the acrylates, methacrylates, styrenes, vinyl halides, esters and acetals, polythene and their various copolymers and the superpolyamides with the vast field of research and endeavor, which their discovery initiated.

These and other polymers, whether they be thermo-hardening or thermo-softening, fully condensed or completely polymerized are of great interest to the trade in the variety of finish they can produce, the standardization of quality in comparison with natural products, the durability of the finish, and the novelty of effect, which intelligent application can attain. Moreover, it is to new agents of this type that the trade must turn to maintain that technical development and superiority which will enable it to recapture lost markets and create new.

These agents will be applied by impregnation, spreading or calendering to provide improved finishes of the present customary types, softening or stiffening, dulling or glazing, air permeable or impervious finishes according to choice, as well as answering some old problems relating to improved wear resistance, dimensional stability of fabric structures and permanent mechanical finishes. Although they may be applied on the usual machinery available in the trade, the necessity for heat treatment in the case of thermo-hardening resins and the improvement in finishing effect which a similar process brings about in thermo-softening resins encourages one to predict that a baker will be as common as a kier and suggests that apart from many other mechanical developments which need attention, the methods of heating textiles need special consideration. Further, the whole subject of mechanical treatment and the machinery therefore requires comprehensive consideration since in the case of finishing in general and polymeric finishing in particular, mechanical treatment is of immense importance.

The introduction of these new agents will make special demands on the skill of the producer, on his ability to select, from the innumerable products potentially available, those worthy of development and educating the users in the properties and uses. I regard these points as most important if the new agents are to make rapid headway against the well-known finishing agents in use to-day. In a corresponding manner the finisher will benefit most by a more scientific approach to the subject than the rule of thumb methods which have been the practice in the past and progress will be most rapid if the sham of secrecy which has shrouded so many finishing operations be exploded and problems discussed frankly between the finisher and manufacturer.

Although initially these new polymers may be applied as such to textiles, if we may take a further peep into the not too distant future one can visualize the application of monomeric agents followed by polymerization or condensation *in situ*, which is likely to effect some profound changes and still further influence the trend, which has been to make the finish a part of the whole and as durable as the fabric to which the finish is applied. In these reactions, the fabric will not necessarily play the part of a neutral substrate but may be providing an essential chemical anchorage.

The carrying out of relatively complicated chemical reactions in which the fiber plays the chief part may well become an everyday task—on every fiber, not the least wool, the side chains and cross linkages in which offer exciting possibilities in fiber modifications.

In this new field of endeavor, disappointments will be many but the necessary foresight, initiative and courage to embark on new ventures are not lacking.

One further point needs mentioning in connection with the value of polymers and condensates to the trade, namely they will enable entry to be made into new fields where the fabric acts as a mere substrate or lamina in bonded structures which will find use as structural materials for example. Industry needs to be particularly sensitive to these less orthodox outlets for its products, and, although removed from the normal trade the experience in the one is invaluable in the other.

(3) THE QUALITY CONSCIOUSNESS OF THE PUBLIC

So far I have spoken only of the textile trade and those who provide finishing agents but the ultimate buyer must not be overlooked. In general, the public are keen and discriminating buyers. Although usually attracted initially by the design and colorfulness of a fabric, unless it be for mere non-decorative, utilitarian use, and secondly by the feel or handle, the buyer, at least in the more educated countries is becoming increasingly conscious of those qualities, intangible and unseen at the time of purchase, which can be summed up in the words "the consumer serviceability of the fabric." The question "how does it wash?" "is it fast to light?" "does it shrink?" "does it crease?" and so on represent a very definite desire to obtain fabrics of quality and distinction which naturally involves coloration and finishing of similar merit. This attitude may be reinforced by the Utility scheme whereby fabrics of standard quality at standard prices are available to the public. The public may have some knowledge, often vague, of what it requires but this latent desire of the buyer may be stimulated and canalized in appropriate directions by the finisher. It is doubtful whether the public knew it wanted anti-crease when that valuable finish was introduced, but it would take a poor view of the absence of such a finish to-day.

Fortunately, from what has been said earlier of new fibers and new finishing agents, the finisher will have at his disposal the means to stimulate and satisfy consumer demand, but it is suggested that he requires more contact with the ultimate purchaser than he has at present and needs to pay special attention to the means whereby the intangible qualities of the fabric can be made patent to the buyer.

(4) THE SCIENTIFIC OUTLOOK OF THE TRADE

For some little time now the textile trade as a whole has tended towards a more scientific outlook. It has realized that research and scientific study are followed by achievement. The impact of events which have been mentioned earlier will outstrip the scientific development within the trade but in due course, and for its own sake it is to be hoped not too tardily, the revolution in finishing and outlook will have been brought about and in the consummation of the marriage between the finisher's art and the finisher's science we may expect some very healthy and beneficial developments.

To take advantage of the wealth of materials at its disposal, however, the trade must be much more visionary and speedier in performance than in the past. It needs to adopt a bold policy of recruitment of scientists and technologists, and it will be required to promote an imaginative and comprehensive research policy. We have been working woefully weak in this in the past. Small scattered units working haphazardly and intermittently are ineffective, to say the least. It is vital that the trade conduct its own research and in so doing it should not overlook the contribution which the Universities and research organizations can make which is complementary to, not a substitute for, the particular technological research which industry must undertake. Indeed it is to such academic and technical institutions that industry must turn largely for its trained personnel and for the study and elucidation of the basic principles and mechanisms which underly the industrial application and processes.

I pause to remind you that we have no independent body carrying out research on applied mechanics and physics in the textile finishing trade, although the manipulation and mechanical and physical treatment of cloth is of paramount importance in finishing and undoubtedly capable of considerable development.

What steps have been taken in this city, the center of the textile industry, to provide in those academic and technical institutions it possesses, the necessary facilities for the study and development of man-made fibers?

These and other examples are vital weaknesses in our armoury. They are the immediate concern of the trade, for as Dr. Cronshaw pointed out in his presidential speech to the Society of Dyers and Colourists, healthy and flourishing Universities in happy partnership with a quickened and imaginative industry are followed by the fruits of invention and discovery.

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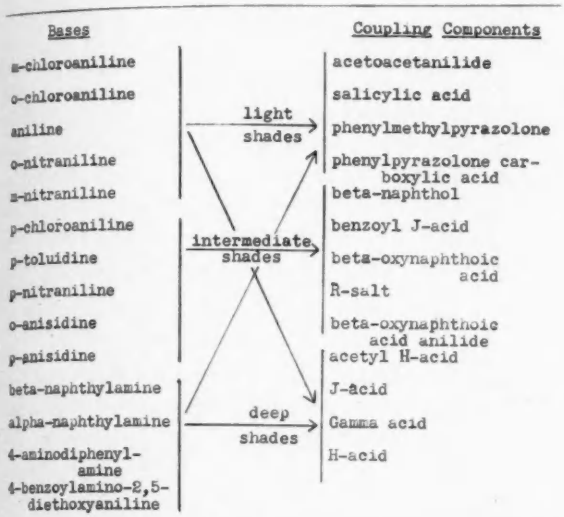
CONSTITUTION OF AZO DYES

(Continued from page 456)

TABLE I

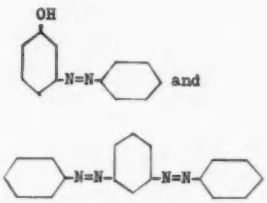


azo dyes would be represented by X → Y ← Z, where X and Z are diazo components and Y is a coupling component capable of coupling in two positions. Secondary dis-azo dyes are prepared by disazotizing a base X and coupling it to a coupling component Y. The monazo color thus obtained is then diazotized (the component Y must have a diazotizable amino group) and coupled with a coupling component Z. This would be represented by X → Y → Z. Tertiary dis-azo colors, a small group, are prepared by coupling two molecules of the same or different diazo components with one molecule of a condensation product of an amino naphthol. The type is represented by X → Y-a-Y ← Z, where X and Z are diazo components and (a) is an atom or group of atoms bridging together two molecules of an amino naphthol.

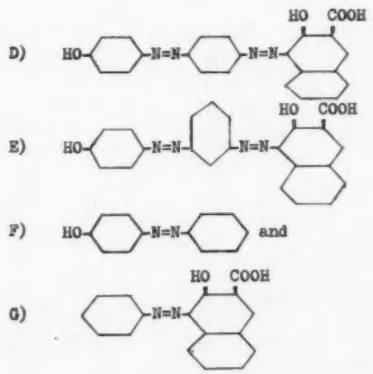
By far the most important type of dis-azo dyes is that represented by X ← Y → Z, where X and Z are coupling components and Y represents a diamine capable of being tetrazotized. Benzidine yellows, prepared by coupling tetrazotized dichlorobenzidine with two molecules of an acetoacetic arylide, are examples of this type which is called, simply, "dis-azo dyes from diamines."

Insofar as the X and Z components are concerned, the shade of dis-azo colors is predicted upon the basis of the inherent depth of shade to be expected from the intermediates concerned. The shade effect of the Y component must be predicted upon the basis of the type of linkages involved.

The Y component is usually either a single aromatic grouping or two or more aryl groupings linked by bonds, atoms, or groups of atoms. If it is a single aromatic grouping and the two azo linkages are attached in meta positions (no resonance structures involving a conjugated system between the two chromophores are possible) there is no deepening of shade and the color of the dye is approximately that of a mixture of the two appropriate monoazo dyes. The two following azo compounds are identical in shade.[4]



This establishes the meta phenylene radical as an efficient insulating group. On the other hand, if the two azo linkages are para, there is a marked deepening of shade. Thus the dye (D) is much deeper in shade than the dye (E). The shade of the latter is identical with the shade of a mixture of the two dyes (F) and (G).[5]

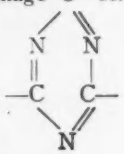


If the Y component consists of two or more aryl groupings linked together by bonds, atoms, or groups of atoms the shade to be expected depends upon whether the links connecting the aryl residues are insulating (prevent resonance) or non-insulating (permit or enhance resonance). If the two azo chromophores are separated by an efficient insulating group the color is the sum of the two parts.

[4] Brode and Herdle, J. Org. Chem., *6*, 713 (1941).
[5] Funkhouser and Brode, J.A.C.S., *56*, 2172 (1934).

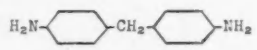
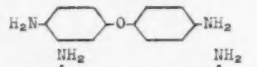
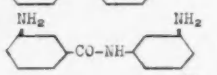
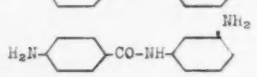
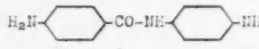
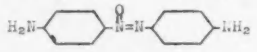
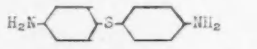
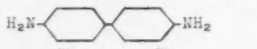
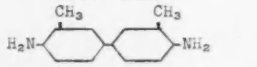
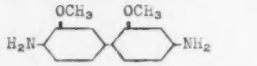
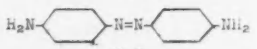
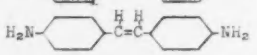
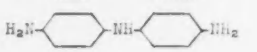
However, if resonance structures involving conjugation between the parts of the molecule are possible, the shade is usually much deeper than would be predicted from simple summation. Consequently a knowledge of which groupings insulate against such resonance is a valuable aid to color prediction.

We have already seen that the meta phenylene radical is an efficient insulating grouping. Other important insulating groupings are the methylene radical —CH_2—, an oxygen linkage —O—, an amide linkage —CO—NH—, and the cyanuric linkage C—X. The azoxy linkage is



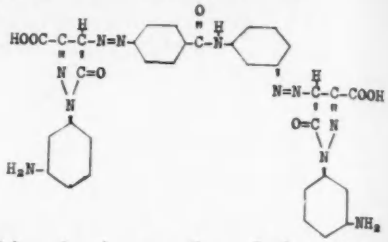
somewhat less efficient.

Just as it was possible to arrange the simple bases in order of their inherent, increasing depth of shade so it is possible to arrange diamines in similar order. The following list should be examined from the standpoint of resonance and insulating groupings. It can easily be seen why those bases near the top of the series give dis-azo dyes of light shades and those near the bottom of the list give deep shades.

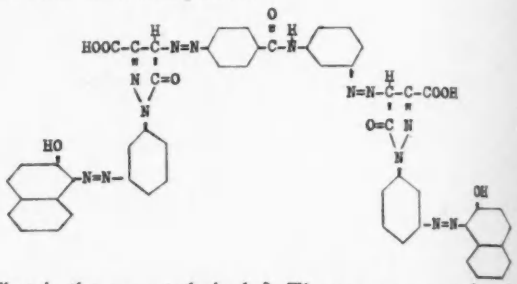
Chemical Name	Structure
1) 4,4'-diaminodiphenylmethane	
2) 4,4'-diaminodiphenylether	
3) m-aminobenzoyl-m-phenylene-diamine	
4) p-aminobenzoyl-m-phenylene-diamine	
5) p-aminobenzoyl-p-phenylene-diamine	
6) 4,4'-diaminoazoxybenzene	
7) Thioaniline	
8) Benzidine	
9) Tolidine	
10) Dianisidine	
11) 4,4'-diaminoazobenzene	
12) 4,4'-diaminostilbene	
13) 4,4'-diaminodiphenylamine	

We have now acquired sufficient background for shade analysis of the most complex of the azo dyes. Let us test our knowledge by considering a few typical problems involving poly-azo compounds.

Suppose we tetrazotize intermediate No. 4 in the above list of diamines and couple it with two molecules of m-aminophenylpyrazolone carboxylic acid:

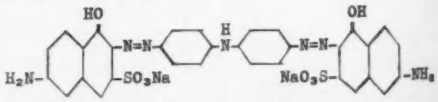


The resulting dye is a medium shade yellow (p-aminobenzoyl-m-phenylenediamine and the pyrazolene are both light shade intermediates—the two azo groupings are insulated from each other by an insulating grouping). Now supposing the yellow dye thus obtained is tetrazotized (it has two azotizable amino groups) and coupled with two molecules of beta-naphthol:

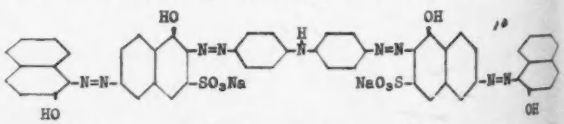


What is the expected shade? The two azo groupings last formed are completely insulated from the first two azos since they are connected through the meta-phenylene radical. Consequently the shade expected would be similar to that obtained by mixing the dis-azo dye first prepared with a dye obtained by coupling diazotized m-aminoacetanilide with beta-naphthol. From previous considerations we would expect the latter color to be in the orange-red region. Therefore, the shade of the tetra-kis-azo dye should be medium orange. If we had used phenylmethyl-pyrazolone in place of the beta-naphthol we would have obtained a medium yellow dye not much different in shade from the original dis-azo color since it would have then amounted to mixing two yellow dyes.

When no insulating groupings are present, deep shades result from poly-azo dyes. For example 4,4'-diaminodiphenylamine, tetrazotized and coupled with two molecules of J-acid is a navy blue:



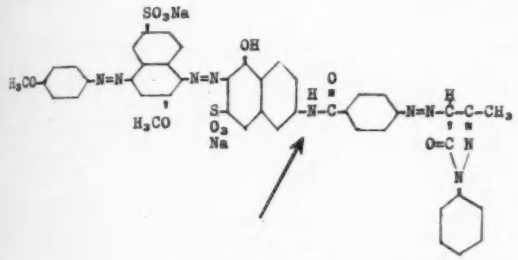
When this dis-azo dye is tetrazotized and coupled with two molecules of beta-naphthol a blue-black results:



Substituting pyrazolone for the beta-naphthol gives a greenish black shade. In this instance a yellow component has

been added to a blue dye but since there are no insulating groups separating the yellow and blue parts of the molecule the result is a black with a greenish cast.

When there is an efficient insulating group between a blue part of a molecule and a yellow part, the result is a bright green. For example p-anisidine can be coupled with 1-amino-2-methoxy-6-naphthalene sulfonic acid and the mon-azo dye thus obtained diazotized and coupled with p-aminobenzoyl J-acid to give a blue dye. Upon diazotizing this blue dye and coupling it with phenylmethylpyrazolone a dye of the following structure is obtained:



This dye is green since the yellow to the right of the insulating group (arrow) is additive in effect with the blue to the left of the insulating group.

Top Dyeing—

(Concluded from page 461)

take care of the dyestuff situation. For fast-to-light slates and tans Indigosols and Helindons can be used. Of the three chrome methods, practically all top is dyed afterchrome or metachrome. As in package dyeing, all the dyestuffs used must have good solubility. Acetic acid is the most useful exhausting agent and most generally used. In cases where a milder and slower exhaust is advisable, ammonium acetate or ammonium sulfate are helpful. For the darker shades, the final exhaust can be accomplished with sodium bisulfate or sulfuric acid. The exhausting agent is governed by the dyestuffs used.

Slubbing must be dyed fast, not only to the requirements of the ultimate consumer, but also fast to subsequent finishing operations.

Slubbing dyed in top form by all but the Abbott system is backwashed, dried and then blended, usually by three or four gilling operations. The backwasher is used because commercial top always contains about 3 per cent of oil which has been used in operations preceding the dyeing. This oil, which has lost its lubricating properties in the dyeing operation, and also the excess color lake present, must be removed. As it is impossible to scour in the dye kettle, it is run through a backwasher. In all but the last one or two bowls a scouring agent, such as soda ash, ammonia, soap or one of the sulfonated higher fatty alcohols, is used. The last bowls contain a warm water rinse. The squeeze rolls between the bowls keep the liquor in succeeding bowls cleaner, and also aid in the scouring action. After leaving the last bowl, the slubbing passes through the dryer, thence through the gill box where fresh oil and moisture are added in the form of an emulsion. The dyed top is then ready for further blending operations, storage, or spinning.

Top dyed on the Abbott system is dried by means of air blown through the spools. In this case the usual backwashing is omitted with the result that the slubbing is not in as a lofty condition as when backwashed, but on the other hand it has not been subjected to the agitation the slubbing received in washing bowls and dryer. It is a moot question as to which is more advantageous.

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TRADE NOTES • NEW PRODUCTS

• MEETING, I. R. I.

The manpower situation in industrial research laboratories today and certain special phases of research management were the principal subjects of discussion at the Fall Meeting of the Industrial Research Institute, held on October 1 and 2 in Chicago at the Edgewater Beach Hotel. The Institute's membership of fifty-six industrial concerns maintaining research laboratories was very largely represented. Some eighty-five executives and their guests attended.

The procurement of technically trained personnel for industrial research during the war period is proving difficult but not impossible, it was brought out at a symposium on this subject conducted by the Institute's Committee on Education, Selection and Training of Research Personnel. Among the effective techniques that are being used are university contacts, friends, agencies, advertising, and releases from other employers. Women are being employed for research work quite generally among member companies of the Institute at an average ratio of about one woman to four men. The normal flow of new personnel from the colleges has been disrupted by the war, but the post war picture appears bright.

At the same session F. M. Dawson, Member of Council, Engineering College Research Association and Dean of Engineering, State University of Iowa, appealed for greater industrial support for research in educational institutions as a means of training research talent for industry. University research facilities are not being fully utilized at present he pointed out. Discussion brought out that current tax regulations and the probable reduction in large endowment gifts to educational institutions after the war make it desirable for industrial concerns to consider giving large grants in aid to universities for research.

Carl S. Miner, Director, The Miner Laboratories, Chicago, was guest speaker at an informal dinner Friday evening. His subject was "The Relation of Management to Research." Pointing out that the success and survival of an industrial concern has come to depend very greatly on its research developments he advocated that the research management function be exercised through a committee made up of the chairman of the board, the president, the director of research, and the vice presidents in charge of production and sales. A number of concerns have followed this procedure with marked success he said. Mr. Miner also discussed problems of supervision based on his long experience in handling research personnel. He emphasized that the maintenance of high morale and the encouragement of independent thought and action are most important factors in developing an effective research organization.

The possibilities of evaluating research for top management in terms of the benefits obtained thereby was thoroughly explored by the delegates through the medium of simultaneous round table conferences at a later session of the meeting. No magic formula was uncovered for doing this in terms of dollars. It was agreed, however, that process and product improvement can be evaluated profit-wise and that the engineering, operating and sales departments can be of real help in this evaluation. The value of research results to a company's advertising was also brought out.

Members of the staff of the Armour Research Foundation, Chicago, presented the program on new research tools which has become a regular feature of Institute meetings. Dr. C. O. Dohrenwend and Dr. G. E. Ziegler demonstrated two instruments which promise to have increasing value in scientific research, the electric strain gauge and the magnetic sound recorder, and discussed their applications. At the same session Harold Vagtborg, Director of the Foundation, Dr. F. W. Godwin, Assistant Director and Dr. W. E. Wilson described an effective system in use at the Foundation's laboratories for organizing research projects and steering them to conclusion.

A period for the consideration of questions from members requiring only brief discussion and a business meeting of the Institute concluded the convention Saturday noon. It was announced that the Winter Meeting will be held in New York.

• NAMED DIRECTOR OF VISCOSE RESEARCH

Dr. Lester S. Sinness, for eight years engaged in research activities in the Technical Division of the Du Pont Rayon Department, has been named Director of Viscose Rayon Research, the company announced recently.

Dr. Sinness, who is 34, is a native of Minnewauken, North Dakota. He attended high school in Devils Lake, N. D., received his bachelor of arts degree at Carleton College in 1931 and his doctor's degree in chemistry from the University of Wisconsin in 1935.

Coming to the Du Pont Company in July of that year, Dr. Sinness was assigned to research on textile rayon at the Richmond, Va., plant, contributing to information on uniform dyeing, cake purification, improved winding and other subjects. He became a research supervisor in 1939, research manager at the Richmond plant in 1940, and assistant director of Viscose Rayon Research in 1941. Last February, when the former Director of Viscose Rayon Research, Dr. George D. Graves, was transferred to a special assignment in the Explosives Department, Dr. Sinness became acting director.

Dr. Edward F. Wesp, who has been rayon research manager at Buffalo, becomes assistant director, succeeding Dr. Sinness, and is stationed at the Richmond plant.

• ELECTED TO BOARD OF DIRECTORS

Stockholders of The Procter & Gamble Company at the annual meeting held October 13th in Cincinnati, elected Neil H. McElroy, manager of the Company's Advertising and Promotion Department, to the Board of Directors. He was subsequently elected by the Directors to the office of Vice President in Charge of Advertising and Promotion.

McElroy joined the Company in 1925 as a mail boy and following a succession of positions in sales and advertising, he was placed in charge of the Company's sales promotion activities in 1929. His outstanding work in this field led to his appointment in 1940 to head of the advertising department.

Frederick V. Geier, prominent Cincinnati industrialist and president of The Cincinnati Milling Machine Company, was also elected to the Board, bringing its membership up to 14, the full number provided for in the Company's Code of Regulations.

In addition to McElroy, the following officers were elected by the Board: Richard R. Deupree, president; Renton K. Brodie, vice-president; Ralph F. Rogan, vice-president; Floyd M. Barnes, vice-president in charge of Purchases; Harvey C. Knowles, vice-president in charge of Manufacture; Thomas J. Wood, vice-president in charge of Sales; Kelly Y. Siddall, comptroller; H. Truxtun Emerson, secretary; Guy B. Taylor, William H. Watters and Lowe H. Wiggers, assistant secretaries; Walter H. Tuttle, treasurer; George S. Woodward, Jr., and John W. Friend, assistant treasurers.

• 1944 SPRING GLOVE COLORS

Fifteen glove colors have been chosen for the 1944 Spring and Summer season by the Glove Color Committee of The Textile Color Card Association, it was made known recently by Margaret Hayden Rorke, managing director.

The fifteen colors listed will all be shown in the Association's 1944 Spring Glove Color Card, now in preparation.

• MEETINGS, A.A.T.T.

Ward Delaney, head of the Institute of Textile Technology, will be the speaker at the November 3rd meeting of the American Association of Textile Technologists. He will discuss the Institute, what it stands for, its aims, procedure of business and ultimate goal.

At the December 1st meeting Jerome Udell of the Office of Foreign Relief and Rehabilitation will be the speaker and at the January 5th meeting Chester M. Robbins of the Aridye Corp. will speak on "Probable Post War Developments Based on Present War Work Research."

• CIBA REVIEW

Ciba Review, number 46, for May, 1943, features the subject of "Crinoline and Bustle." The following articles appear: Introductory Remarks on the Crinoline and Bustle; The Social and Cultural Background in the Second Half of the Nineteenth Century; The Crinoline; The Bustle. There are many interesting illustrations.

• NATIONAL SAFETY MOVEMENT

The lives of 300,000 Americans have been saved since the national safety movement began in 1913.

This is revealed in the 1943 edition of "Accident Facts," the annual statistical yearbook of the National Safety Council.

A box score of accidents contained in the book shows that the death rate has been lowered each year in the 30-year period between 1913 and 1943, except for 1917 and 1936. In 1913 the rate was 85.5 per 100,000 population. Last year it was 69.3.

During the triple decade there were 2,707,000 accidental deaths. If the death rate had been as high each year as it was in 1913, this number would have risen to 3,004,000.

• 1944 SPRING MILLINERY COLORS

Twenty-three millinery colors, with specific recommendations for the three classifications of fur felt, wool felt and straw, have been adopted for the 1944 Spring and Summer seasons by the Millinery Color Committee of The Textile Color Card Association, it was announced recently by Margaret Hayden Rorke, managing director. The majority of the shades selected appear in the Association's 1944 Spring Woolen and Rayon Collections, recently issued to members, while the remaining colors have been carried over from past season cards.

The following have been especially chosen for fur felt: Arctic Sea, Chinese Lacquer, Allied Blue, China Jade, Toffee Beige, Cream Cocoa, Patio Fuchsia, Chili Green, Red Pepper, Siesta Violet and Strato Grey.

The color range selected for wool felt comprises: Ocean Aqua, Hero Blue, Chili Green, Red Pepper, Siesta Violet, Wild Grape, Placid Green, Airman Blue, Light Coffee, Country Beige, American Eagle Gold, Nassau Pink and Strato Grey.

Chosen especially for straw are the following: Chinese Lacquer, Hero Blue, China Jade, Cream Cocoa, Patio Fuchsia, Sky Beige, Liberty Red, Nassau Pink, Burnt and Strato Grey.

In addition to the above, black, brown and navy are specified for all three classifications and white for straw.

Mrs. Rorke called attention to the close fashion coordination between millinery and glove colors, pointing out that the following ten shades are among the colors selected for gloves as well as millinery: Ocean Aqua, Hero Blue, Cream Cocoa, Chili Green, Siesta Violet, Wild Grape, Country Beige, Liberty Red, American Eagle Gold and Strato Grey.

• MEETING, ADVISORY COMMITTEE, A.S.A.

At a meeting held September 27 in New York, the Advisory Committee on Ultimate Consumer Goods of the American Standards Association voted to enlarge its membership to include representatives of national manufacturing groups and service organizations as well as to broaden the consumer, and distributor interests that have thus far made up the principal membership of this committee. (The ACUCG advises the ASA on activities in the field of consumer goods Standards.) Among the new groups to be invited to join will be: manufacturers, trade associations, several additional consumer and retailing groups, and labor organizations.

The committee also agreed to the need of completing as rapidly as possible three basic jobs which must be finished before a large number of needed standards in the field of consumer goods can be undertaken:

1. *Textile Test Methods*, which means agreement among laboratories on acceptable procedures for testing textiles, and looking toward uniformity in interpretation of test data.
2. *Definitions for Consumer Goods*, a job started a number of years ago to develop a "dictionary" of widely used but variously understood terms in the consumer-retailer-advertising field.
3. *Standards for Children's and Women's Garment Sizes.* A standard for boys' body sizes has already been completed, but completion of the others is fundamental to the development of a common denominator in size classifications.

The Committee discussed the need of beginning now to plan for the post-war period, recognizing, however, that the introduction of many new materials and methods during the war era will have an important influence on such a program. It was recommended that a planning committee be appointed to:

1. Investigate the commodity field as it is affected by new materials, making recommendations to the ACUCG as the need arises for standards for specific commodities made of new materials such as plywood, plastic, synthetic rubber, etc.
2. Review standards set by the war agencies, especially WPB and OPA, which may lend themselves to the development of American Standards in the important field of consumer goods.
3. Review American War Standards for consumer goods, making recommendations as to whether they should be adopted as peacetime standards or withdrawn.

Before adjourning, the Committee directed its chairman to appoint a small executive committee from among its membership. Duty of this executive committee will be to act as an interim committee in direct supervision of projects; in expediting the development and completion of standards, and maintaining continuing liaison with all subcommittees operating under ACUCG.

Irwin D. Wolf, Vice-President, Kaufmann Department Stores, presided over the meeting. Morris L. Chandross, Commodities Engineer, of the ASA staff was appointed secretary of the committee.

• JOINS NUODEX

Nuodex Products Co., Inc., Elizabeth, N. J., has announced that A. E. Bartlett has become associated with them as Director of Sales Service. Mr. Bartlett is a native of Lansdowne, Pennsylvania, and received the degree of Bachelor of Science in Chemical Engineering from Lafayette College in 1935, majoring in Rheology.

He received his early training in the principles of formulating surface coating materials in the Philadelphia Laboratory of E. I. duPont de Nemours & Company. In 1941 he became a member of the Technical Staff of the Fuchs and Lang Division of General Printing Ink Corporation, resigning as Chief Chemist of the General Industrial Finishes Division of General Printing Ink Corporation to join Nuodex.

• CAST IRON BORINGS

Millions of pounds of the tiny slivers left after cast iron is drilled or machined are now critically needed for explosives, dyes, and chemicals to aid in preserving rubber.

E. I. du Pont de Nemours & Company stated recently that each year it requires more than 100,000,000 pounds of these shavings, called chemical borings, for its plants and the ordnance works it operates for the Government.

Borings are used as a so-called reducing agent in making aniline for dyes. Aniline,

in turn, enters into the manufacture of dimethylaniline, employed in making tetryl, a booster for high explosives and diphenylamine, a stabilizer for smokeless powder and a required chemical in preserving natural and synthetic rubber.

Soft, oil-free borings, such as result from machining of cast iron piston rings, shock absorber housings, transmission housing, pulleys, and textile machinery, are badly needed in carload lots. An average box car carries 90,000 pounds of borings.

Plants machining cast iron are urged to sell their borings, rather than remelting or shipping to blast furnaces. Hard borings are used, too, but the shortage is in the soft, oil-free ones.

• JOINS ATLANTIC CHEMICAL

Officials of The Atlantic Chemical Co., Centredale, R. I., recently announced that John Bonino had joined their organization, where he will act as textile finishing technician. Mr. Bonino's record includes more than 40 years in the textile industry, and he has long been recognized as one of the leading finishers in the business. During the past eleven years he was superintendent of finishing at Gaede Dyeing Co., in Paterson, N. J.

• UNITED STATES ARMY STANDARD COLOR CARD

At the special request of the Quartermaster General of the United States Army, The Textile Color Card Association has revised the United States Army Standard Color Card showing the Official Standardized Shades of Olive Drab, Khaki and Drab Sewing Threads, the first edition of which was brought out by the Association last year.

The Revised 1943 Second Edition, just issued, shows like the first, six colors in thread tassels and lists opposite each sample the various items for which each thread color is used. A practical innovation in the new card, it was pointed out by Margaret Hayden Rorke, managing director of the Association, is the addition of certain official shade numbers assigned by the Quartermaster Corps to fabrics for clothing and equipage for which the sewing threads are designated.

In the new edition, Shade S (U. S. Army Olive Drab), which was shown in the first edition, does not appear and its place, Shade S-1 (U. S. Army Olive Drab) has been substituted. The former was "used for sewing olive drab items of clothing or equipage made of cloth, cotton, synthetic, resin-coated; cloth, cotton, oil-treated; cloth, cotton, impermeable; cloth, cotton, herringbone twill." The new Shade S-1 is "used for sewing olive drab (Shade No. 10) items of clothing or equipage made of cloth, cotton, synthetic, resin-coated; cloth, cotton, oil-treated; cloth, cotton, impermeable; all fabrics in olive drab (Shade No. 7); headnets, mosquito, O. D. (Shade No. 6) and all items fabricated from material in olive drab Shade No. 4 (Jungle Equipment Shade)."

Shade P (U. S. Army Khaki), Shade Q (U. S. Army Olive Drab), Shade R (U. S. Army Olive Drab), Shade T (U. S. Army Olive Drab, Dark Shade) and Shade U (U. S. Army Drab) remain the same in the new edition, except for slight revisions and additions of usages for sewing various fabrics.

Mrs. Rorke stated that the Quartermaster General's Office distributes a large quantity of this Revised 1943 Second Edition Thread Card to its various depots throughout the country. Thread manufacturers and other firms making clothing or equipage for the United States Army likewise make wide use of this reference card, which may be secured from The Textile Color Card Association of the United States, Inc., 200 Madison Avenue, New York 16, N. Y.

• "E" AWARD

The Army-Navy "E" Award for outstanding accomplishment in the production of materials needed for the war effort was presented on October 13th to the employees of the Front Royal, Va., plant of the American Viscose Corporation rayon producers. This is the second "E" Award to be made to a rayon plant, the first having been presented in July to the American Viscose Corporation's plant at Marcus Hook, Pa.

The Honorable Aubrey G. Weaver, of Front Royal, member of the Virginia State Senate, was Master of Ceremonies and made the address of welcome. Lt. Colonel Hayward K. Kelley, Chief of the Ammunition Branch, Philadelphia Ordnance District, officiated for the Army and made the presentation of the "E" flag, which was accepted by Gerald S. Tompkins, the plant manager. Lt. Commander James L. Truslow, U.S.N.R., of the Bureau of Supplies and Accounts, Washington, D. C., represented the Navy and gave the "E" Award pins to the employee representatives on the platform. These were Frank Nesbitt, principal representative, who made the address of acceptance on behalf of all employees; Claude W. Beckner, Gertrude C. Berryman, Robert L. Hickerson, A. G. McVay and Albert L. Sorrells.

• "CORONATION" SEWING MACHINE

Birch Brothers, Inc., of Somerville, Mass., have recently put on the market their "Coronation" Railway Sewing Machine. The machine is an adaption of their "Coronation" Chain Stitch Head to their Railway Mounting.

It is stated that this Head, which has a reciprocating hook around which the thread cannot become wound, commences sewing at the very edge of the fabric. This feature prevents the seam from opening up at the selvedges during processing. The fabric does not have to be under the needle to prevent winding around the looper.

The machine is said to be particularly desirable where a chain stitch machine is desired to sew heavy or closely woven fabrics or very loosely woven fabrics that have a tendency to pull through the needle plate of revolving looper machines.

The Railway Mounting is fitted with large rubber tired swivel castors so that it may be moved easily and quietly. The machine may also be had with the bed or track suitable for mounting on the frames of processing machines. The travel of the Head is stopped automatically and the machine is adjustable to various widths of fabric, and the fabric is held on both sides of the needle.

• 1944 SPRING WOOLEN AND RAYON CARDS

The regular editions of The Textile Color Card Association's 1944 Spring Woolen and Rayon Cards have just been released to the trade, it was stated recently by Margaret Hayden Rorke, managing director. The woolen collection comprises 34 shades and the rayon 32, 12 of which are the same in both groups, thus reducing the total number of colors, in conformity with the Association's policy of furthering the Government's wartime conservation measures. A distinct lightening of tones is also noted in both the rayon and woolen groups.

In addition to the basic colors in these cards, which include new renditions of cocoa, soft greyed blues, amber, lacquer red, jade green, raspberry, lime, aqua, grey and beige, brilliant Mexican Sun Colors are highlighted in the woolen range. The rayon collection plays up two featured color themes, Wedding Bell Pastels and in A Chinese Garden.

OBITUARY

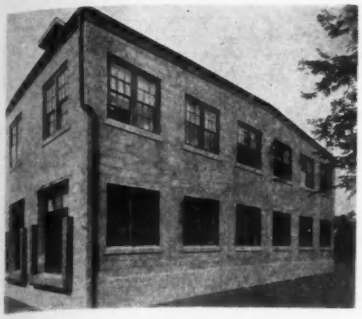
A. C. DUNCAN

A. C. DUNCAN, 67, manager of Hercules Powder Company's Paper Makers Chemical office in Portland, Oregon, died September 26 at Portland (of coronary thrombosis) after a brief illness.

Born in Scotland, Mr. Duncan began his apprenticeship in the paper industry at the age of 12, and later came to this country gaining wide experience in his field in Canada and the United States.

In 1914, he joined the Paper Makers Chemical Corporation, Kalamazoo, Mich., as salesman, and remained with it in that capacity when the company was bought by Hercules Powder Company in 1931.

● NEW ALROSE RESEARCH LABORATORY



The photograph herewith shows a recently completed addition to the plant of the Alrose Chemical Co. of Providence, R. I. This new addition, it is reported, houses a most complete and most modern research laboratory.

Here a staff of chemists under a competent research director devotes its entire time to the creation and perfection of new synthetic chemicals which is is stated, will enable the texile industry to produce better fabrics at less cost.

Over a period of years the Alrose Company has pioneered in the chemical field with an impressive list of research products, including wetting agents, rewetting agents, synthetic detergents, cation softeners, waterproofing compounds, mildewproofing agents, flame retardants, printing gums, glycerine substitutes, synthetic waxes, emulsifiers for oils and waxes, keer boiling assistants, etc. It is anticipated that the new laboratory will greatly expedite and facilitate their research program.

● JOINS REFINED PRODUCTS

A. J. Ramunda has joined the Refined Products Company of Lyndhurst, N. J. as field technician.

For the past twenty-five years he has been associated with the dyeing and finishing business in northern New Jersey and New England. He has had a wide experience in processing, dyeing, printing and finishing and has been in charge of research and development of new types of fabrics over a long period.

In 1918 he started with the Oriental Silk Printing Company, later Apex Oriental Corporation, in charge of processing and dyeing in their printing and plain dye divisions. He then went with Mt. Hope Finishing, Duplan Silk Corporation and recently resigned as Superintendent of Farwell Bleachery, Lawrence, Mass., to join Refined Products Company.

Mr. Ramunda has already proven of value to processors and finishers in the development of new fabrics.

● ELECTED PRESIDENT OF AQUA-SEC

William H. Scott has been elected president of the Aqua-Sec Corp. succeeding Donald M. Martin, resigned. He has been vice-president for the past five years. Before joining Aqua-Sec, Mr. Scott was president of Colonial Fabrics, and prior to that had been with Susquehanna Silk Mills, Inc.

It is announced that the business of Aqua-Sec will be carried on as before. The company also acts as sales agents for Sylvania Industrial Corp. and Gallowhur & Co.

● ANNUAL REVIEW NUMBER

The Eighth Annual Processing Review Number of the AMERICAN DYESTUFF REPORTER will appear on November 22nd, 1943. This issue will contain all of the papers which will be presented at the Fourth Annual Intersectional Contest on October 22nd in New York.

Another special feature of this issue will be a listing of new products for the textile wet processing industry which have been brought out since November, 1942. Manufacturers are nivited to submit niformation concerning their new products. This information should include hte trade name of the product and a BRIEF summary of its uses. Each product should be listed on a separate sheet of paper. In order to insure publication in our issue of November 22nd, this information should be in our hands NO LATER THAN OCTOBER 29TH.

●

Back the Attack!

BUY

WAR BONDS!

●

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933, OF AMERICAN DYESTUFF REPORTER published bi-weekly at New York, N. Y., for October 1, 1943.

State of New York, County of New York, ss.:

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Myron D. Reeser, Secretary of Howes Publishing Company, Inc., who, having been duly sworn according to law, deposes and says that it is the Publisher of the AMERICAN DYESTUFF REPORTER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Alfred P. Howes, 440 Fourth Ave., New York, N. Y.; Editor—Prof. Louis A. Olney, Lowell, Mass.; Managing Editor—Norman A. Johnson, 440 Fourth Ave., New York, N. Y.; Business Manager—None.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Owner: Howes Publishing Company, Inc., 440 Fourth Ave., New York, N. Y. Stockholders:

Alfred P. Howes, 440 Fourth Ave., New York, N. Y.; Mary K. Howes, Utica, N. Y.; Cecile R. Howes, State Line, Mass.; N. H. Hiller, Carbondale, Pa.; Louis A. Olney, Lowell, Mass.; Jos. L. Schroeder, Hartsdale, N. Y.; Myron D. Reeser, Maplewood, N. J.; H. F. Crawford, Valley Stream, L. I.; L. R. Keeffe, West Redding, Conn.; C. E. Tolsdorf, Forest Hills, L. I.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

M. D. REESER, Secretary

Sworn to and subscribed before me this 1st day of October, 1943.

(SEAL) CAROLINE ESSENBREIS

Notary Public, Kings County, Clerk's No. 148, Register's No. 51-E-5, N. Y. Co. Clk. No. 73, Reg. No. 50-E-5, Queens Co. Clk. No. 1783, Reg. No. 51-E-5. (My commission expires March 30th, 1945.)

WAR BORN PAINTS WILL IMPROVE DYEHOUSE EFFICIENCY AND GREATLY FACILITATE ITS MAINTENANCE

JOHN WINTERS FLEMMING

TRIED and tested in the toughest of all laboratories—war in all climates the world around—the paints that camouflage, protect and preserve our ships and planes, tanks and trucks, jeeps and peeps, guns and helmets, will improve the efficiency of the post-war peacetime dyehouse and will immeasurably aid and facilitate its maintenance.

The paint of tomorrow for the dyehouse and its equipment will cost less and go farther, will be mixed and applied more simply and speedily, will dry faster and last longer, will be quick and easy to wash and will hold up under washings, and will leave no lingering after-odor.

Paints will be less subject to deterioration when exposed to extreme temperatures, hot or cold, and when exposed to chemical elements in the atmosphere. One coat will generally do the work that required two coats heretofore. There will be a widespread use of scientifically selected colors designed to improve illumination and to enhance decoration.

Colors will be more fadeproof and will be selected and formulated for use with fluorescent lighting as well as for use with incandescent illumination. This is highly important for the identical self-same color often produces quite different effects under the two different types of lighting.

Just recently there appeared on the market a new, amazingly efficient and inexpensive, all-purpose permanent paint concentrate, a by-product of that marvelously versatile vegetable, the soy bean which has the vital wartime advantage of being a non-critical material.

Developed after four years' experimentation, the new paint concentrate has an alpha protein base which makes for toughness and durability, and can be mixed and applied easily and quickly by the most inexperienced hands and with the most excellent results.

It is mixed, or thinned, simply by adding water, another non-critical material, and one gallon of the concentrate thinned with a half gallon of water gives enough paint for the average size room or its equivalent in equipment. It is just as simply and speedily applied, merely by brushing it on. It is fast leveling and leaves no brush marks and after applying it, mars and scratches can be painted out.

As applicable to dyehouse equipment and appliances as to the plant itself, one coat of the new paint completely covers plaster, wallboard, wallpaper and woodwork and usually suffices for brick, tile and concrete surfaces. It dries in half an hour, has no after-odor, and can be washed simply and speedily by rubbing it with a damp cloth, or, if needed, with soap and water, and will stand up under repeated washings.

•CLASSIFIED•

POSITION WANTED: Hosiery Dyer. 17 years' experience covering all types of dyes and a wide variety of fabrics. Draft exempt. Write Box No. 474, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

WANTED: Salesmen or sales agents for resinous and synthetic specialties for textile field. Prefer men now selling these items with following. Commission or salary basis. State experience and territory. Box No. 475, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

WANTED: JIG DYER—With experience on rayon and acetate fabrics. Pad experience desirable. Applicant must not be engaged in war work and must have sanction of the local War Manpower Commission. Write Box No. 476, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

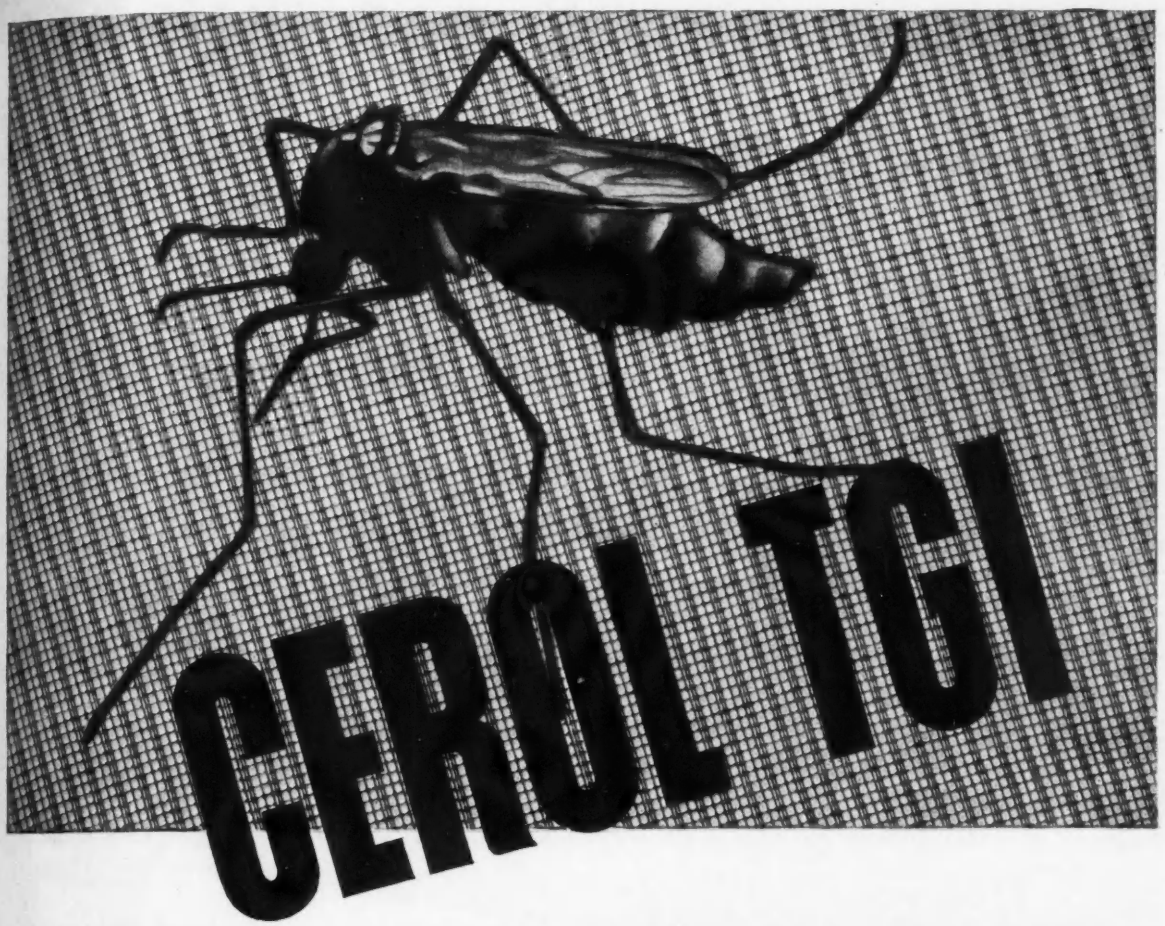
WANTED: Textile Chemist, preferably a graduate of a textile school, to learn hat dyeing in research laboratory of large hat manufacturing concern. Send qualifications, etc., to Box No. 477, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

WANTED: Head Chemist wanted to take full charge of manufacturing textile chemical specialties for well established concern. Excellent opportunity and good salary for qualified man. Our employees know of this advertisement. State age, experience and draft status. Write Box No. 478, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

FOR SALE: One used Color Fade-Ometer in excellent condition, complete. Price reasonable. Write Box No. 479, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

WANTED: Master dyer by mid-west plant. Experience in package dyeing of developed, direct, napthol, vat colors and bleaching of cotton thread and yarn. Able to fully develop formulas and control production. Excellent opportunity for alert party. Reply giving complete details including age, draft status, experience, references, salary desired. Box No. 480, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.

POSITION WANTED: As manager, or assistant manager in a dyeing, printing and finishing plant. Thoroughly experienced, fully familiar with trades requirements. Will consider representing a reliable machinery concern, or a responsible chemical manufacturer. Write Box No. 481, American Dyestuff Reporter, 440 Fourth Ave., New York, 16, N. Y.



WATERPROOFING AND MILDEWPROOFING OF COTTON GOODS COMBINED IN ONE SIMPLE OPERATION . . .

At Last! — A Stable Emulsion. Now Sandoz presents a new member of the well-known CEROL family, a combined waterproofing and mildewproofing agent distinguished by extreme stability. CEROL TGI ends the danger of time lost in re-processing. By combining two operations in one, CEROL TGI greatly speeds up production.

Meets Government Specifications. CEROL TGI has established high standards in spray and mildew-resistance tests. Non-toxic, and therefore suitable for garments in contact with the skin, CEROL TGI is being put to immediate use for water-and-mildewproofing **mosquito netting** used in the tropics.

Saves Time and Manpower. Applicable to any cotton goods, CEROL TGI is easy to use with your normal cotton finishing equipment, such as padder, quetch or jig. Regular cans or frames are suitable for drying; no baking or curing is required. As well as saving production time, CEROL TGI, successfully used by relatively unskilled personnel, helps solve your manpower problem. Write for full details, naming your application.

SANDOZ CHEMICAL WORKS, INC.

61 Van Dam Street, New York, N. Y.

Sandoz thinks ahead with textiles

SANDOZ

Boston, Mass. Charlotte, N. C. Paterson, N. J. Philadelphia, Pa. Providence, R. I. Chicago, Ill. Los Angeles, Calif.

BIXAMINE BROWN BRLL

- Direct
- Homogeneous
- Level Dyeing
- Excellent light fastness

BICK & CO., Inc.

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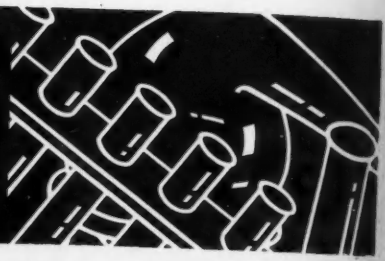

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• INDEX • TO ADVERTISERS

Alrose Chemical Co. XII
Althouse Chemical Co. .....
Amalgamated Chemical Corp. IV
American Aniline Products, Inc. ..... Third Cover
American Cyanamid & Chemical Corp. ..... Second Cover
American Dyewood Co. .....
American Viscose Corp. V
Ansul Chemical Co. .....
Aridye Corp. XVI
Arkansas Company X
Arnold-Hoffman & Co., Inc. .....
Atlantic Chemical Co. .....
Atlas Electric Devices Co. XXVII
Aqua-Sec Corp. XIX
Becco Sales Corp. .....
Bick & Co., Inc. XXIV
Burkart-Schier Chemical Co. XXVI
Butterworth & Sons Co., H. W. .....
Calco Chemical Division, American Cyanamid Co. XXII
Campbell & Co., Inc., John VII
Carbic Color & Chemical Co. XX
Carbide & Carbon Chemicals Corp. .....
Plastics Division .....
Ciba Company, Inc. III
Colgate-Palmolive-Peet Co. .....
Commonwealth Color & Chemical Co. .....
Du Pont De Nemours & Co., E. I. .....
Grasselli Chemicals Dept. .....
Electrochemicals Dept. XVIII
Emery Industries, Inc. .....
Exact Weight Scale Co. .....
Fancourt & Co., W. F. .....
Gallowhur & Co., Inc. .....
Geigy Company, Inc. ..... Front Cover
General Dyestuff Corp. IX
Glyco Products Co., Inc. .....
Hart Products Corp. .....
Hercules Powder Co., Naval Stores Dept. .....
Hooker Electrochemical Co. .....
Kali Manufacturing Co. .....
Kelco Co. VI
Laurel Soap Mfg. Co. .....
Mathieson Alkali Works, Inc. .....
National Aniline Division, Allied Chemical & Dye Corp. XV
National Carbon Co., Inc., Carbon Sales Division .....
New Jersey Zinc Co. .....
Nyanza Color & Chemical Co. XXIV
Onyx Oil & Chemical Co. VIII
Perkins & Son, Inc., B. F. XI
Philadelphia Quartz Co. XXV
Prince George Hotel .....
Procter & Gamble .....
Refined Products Corp. XVII
Royce Chemical Co. ..... Back Cover
Sandoz Chemical Works XXIII
Scholler Bros., Inc. .....
Socony-Vacuum Corp. .....
Solvay Sales Corp. XXV
Sonneborn Sons, Inc., L. XIV
Stein, Hall & Co., Inc. .....
Smith, Drum & Co. .....
Sylvania Industrial Corp. .....
Tennessee Eastman Corp. .....
Union Carbide & Carbon Corp. .....
Van Vlaanderen Machine Co. .....
Virginia Smelting Co. .....
Wallerstein Co., Inc. XXVII
Westvaco Chlorine Products Corp. XIII
Wolf & Co., Jacques .....
Young Aniline Works .....
Young Co., J. S. .....
Zinsser & Co. XXVII

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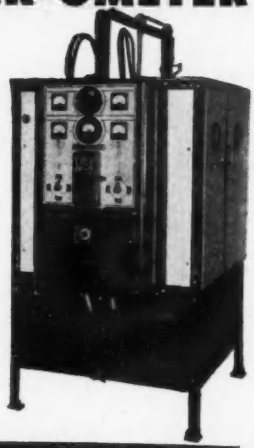

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